ENGINEERING
NEWS-RECORD

JUNE 12, 195

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CONTENTS ON PAGE [illegible]

- Best plan chosen for 'Quoddy tidal power [illegible]
- Triangle beams are designed for show [illegible]

Harmer Davis: Transportation is his meat *p. 97*

A McGRAW-HILL PUBLICATION

E B POWER GS
UNIVERSITY MICROFILMS I
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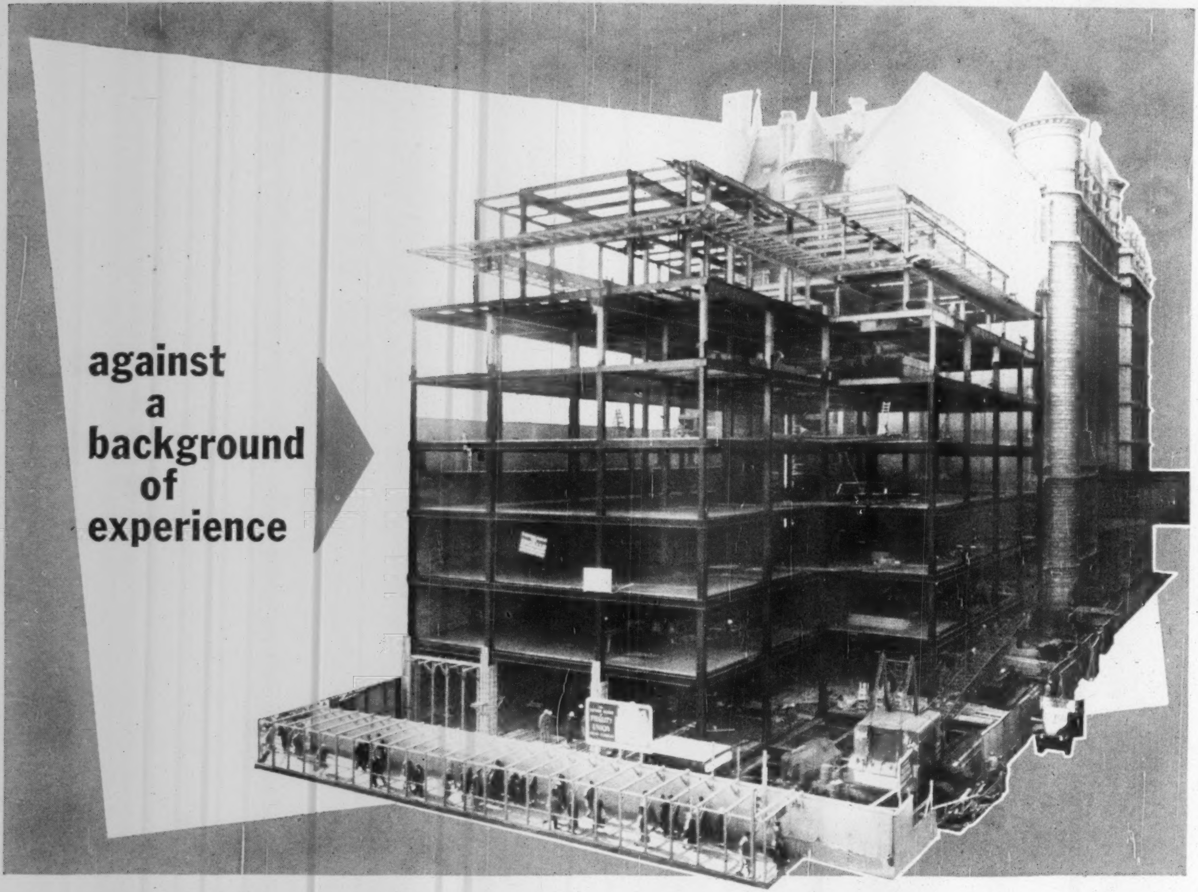

**STRUCTURAL STEEL
FABRICATED BY**

INGALLS

A striking contrast of the old and the new is provided by this photograph of the new building now under construction in Newark, New Jersey, being built by The Prudential Insurance Company of America for occupancy by Fidelity Union Trust Company. Over 1170 tons of structural steel for this clean-lined new building were fabricated by The Ingalls Iron Works Company. Readily available, structural steel is the choice of many architects and engineers when speed of erection must be combined with great strength and economy.

Call on Ingalls when your plans require structural steel. Ingalls, with over 48 years of steel construction experience, is today one of the nation's major fabricators. Ingalls' background of long experience and skillful performance can serve you—better.

**Built by The Prudential Insurance Company of America
for occupancy by Fidelity Union Trust Company**

Architects: Voorhees, Walker, Smith & Smith
Structural Steel: The Ingalls Iron Works Company

THE
INGALLS
IRON WORKS
COMPANY
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BIRMINGHAM, ALABAMA

INGALLS INDUSTRIES ARE:
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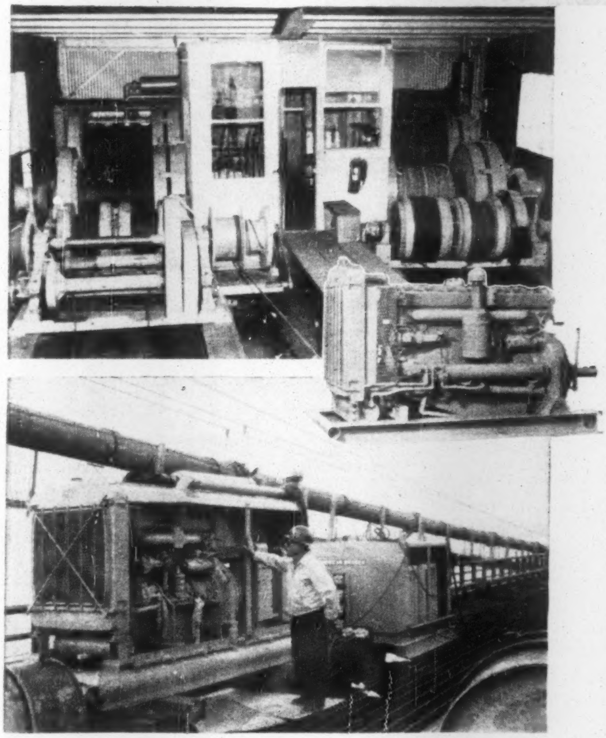
14
MURPHY DIESELS help build MACKINAC BRIDGE



FOUR 100 KW Murphy Generator Sets powered the concrete mixing plant on a Merritt-Chapman & Scott barge (above).

TWO 177 HP (continuous) Murphy Diesels powered hoists and anchor lines on a floating tower derrick setting steel for American Bridge Division, U. S. Steel Co. (left).

TWO 100 KW Murphy Diesel Generator Sets pulled a battery of 10 welders on another Merritt-Chapman & Scott barge.

ONE Murphy Diesel Mech-Elec Unit furnished both mechanical and electric power on a crushing plant owned by The Straits Aggregate & Equipment Corp.

TWO Murphy Diesels drove 75 KVA generators which powered the signal system for cable spinning operations, as well as lights for the entire work area at night.

ONE Murphy re-powered a large crane used on the project.

ONE 225 HP (continuous) Murphy Diesel powered a crushing plant for Mackinac Aggregates Corporation.

ONE Murphy Diesel Welding Power Unit pulled 6 welders for American Bridge Division (left).

Heavy-Duty MURPHY DIESEL POWER

Murphy Diesel engines and power units, from 96 to 264 HP; "Packaged" Generator Sets, from 64 to 165 KW; Mech-Elec Units combining mechanical and electric power available.

MURPHY DIESEL COMPANY

5321 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

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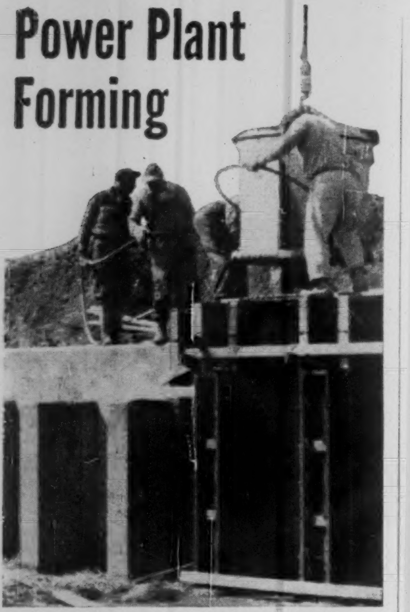
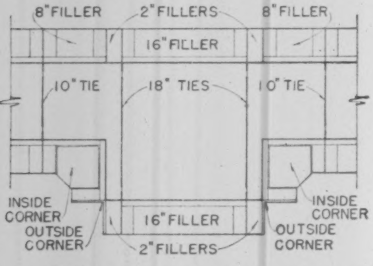
Power Plant Forming



Symons Forms Help Contractor Race Clock

Pour 530 Yards of Concrete in 5½ Hours

Racing a siege of wet, windy weather, workmen on the new $10 million Blue Valley Station of the Independence, Mo. power plant, teamed up to pour 530 yards of concrete during one 5½ hour period.



Pilasters similar to the ones shown are easy to erect with Symons Fillers and Corners.

Sharp Bros. Contracting Co., Kansas City, the contractor, is using 8,000 square feet of Symons Standard High Strength Forms to pour 40,000 square feet of concrete. Much of the concrete is in thick slabs and pedestal bases with wall thicknesses varying from six to 84 inches. Symons 84-inch washer ties are being used in pouring pedestals for the turbines.

You can rent Symons Forms, Shores and Column Clamps with purchase option. Information on Symons products upon request.

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EIGHTY-FOURTH YEAR OF PUBLICATION

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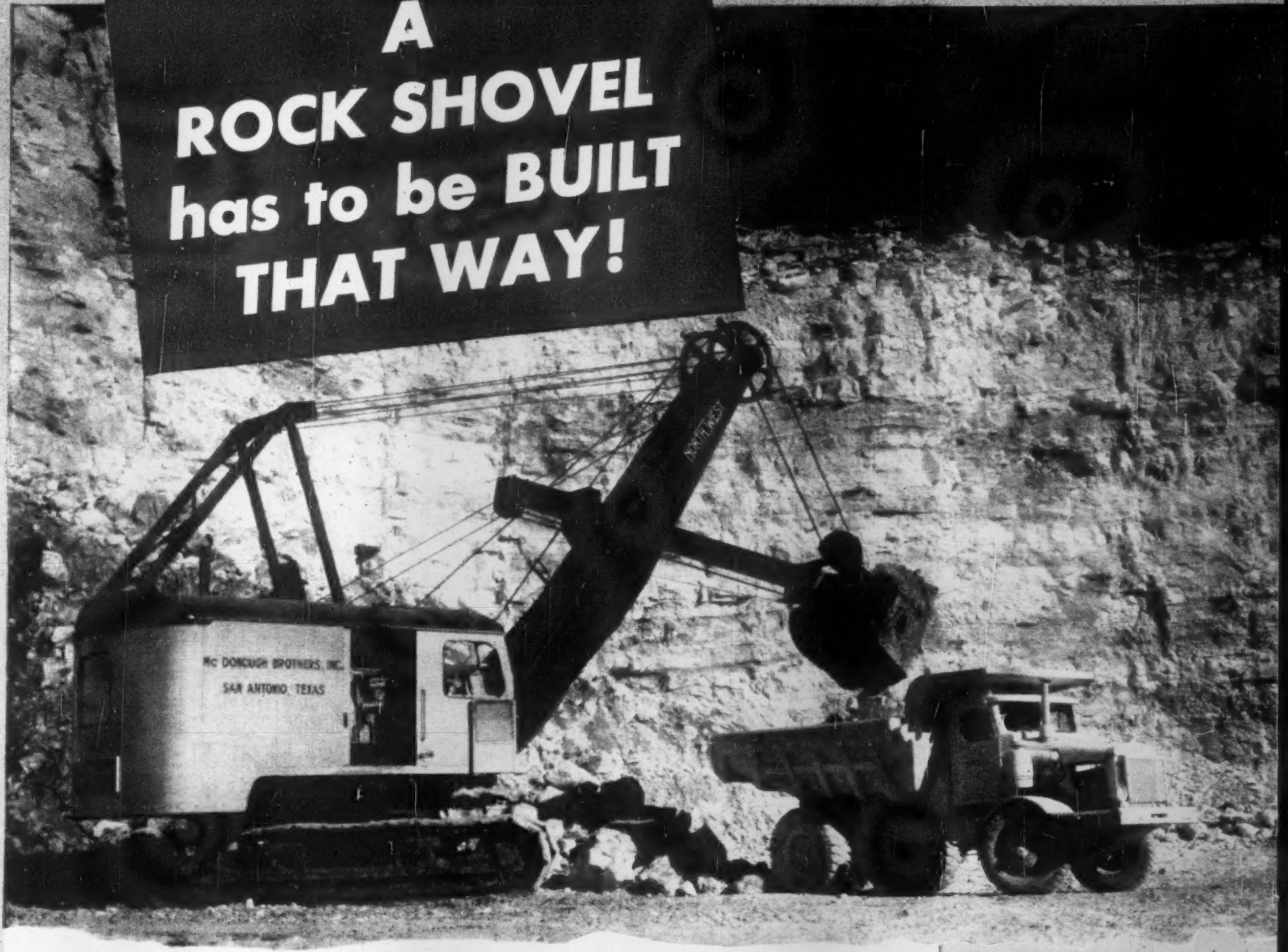
A ROCK SHOVEL has to be BUILT THAT WAY!



The recognized superiority of Northwest Shovel performance in rock didn't just happen. A *real* Rock Shovel has to be built that way. Northwest Shovels were engineered to handle rock digging at its worst and Northwest advantages in rock mean greater output in easy digging.

The qualities that make Northwest outstanding in any type of digging are easy to check. Start with the model you are interested in from the big 80-D 2½ yd. rig down to the workhorse of the ¾ yd. field, the Model 25.

Booms, rugged and powerful, Sticks of heavy section, the Northwest Dual Crowd—a Crowd that gives you crowding force most other Independent Crowd Shovels waste! This simple crowd with its additional crowding force makes it possible to handle harder digging and more yards per hour—per day—per month!

Other advantages—the Cushion Clutch eliminates shock overloads before they can reach operating machinery—the Feather-Touch Clutch Control assures ease of operation and gives the "feel-of-the-load" free from the complications of compressors, tubing and other delicate mechanisms, Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and make spotting heavy loads easier—these are just a few of the many features that combine to assure performance in any digging—features that have made Northwest the recognized leader in rock work.

NORTHWEST ENGINEERING COMPANY
1502 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

Perhaps Rubber Tired Equipment will do your job better. The Northwest Truck Crane brings you a combination of advantages found in no other similar machine. 25 and 35-ton capacity.

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NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
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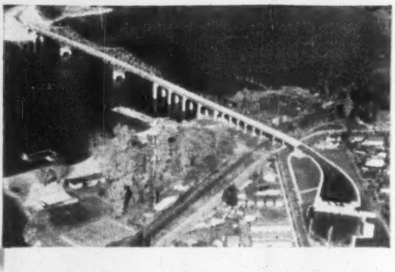

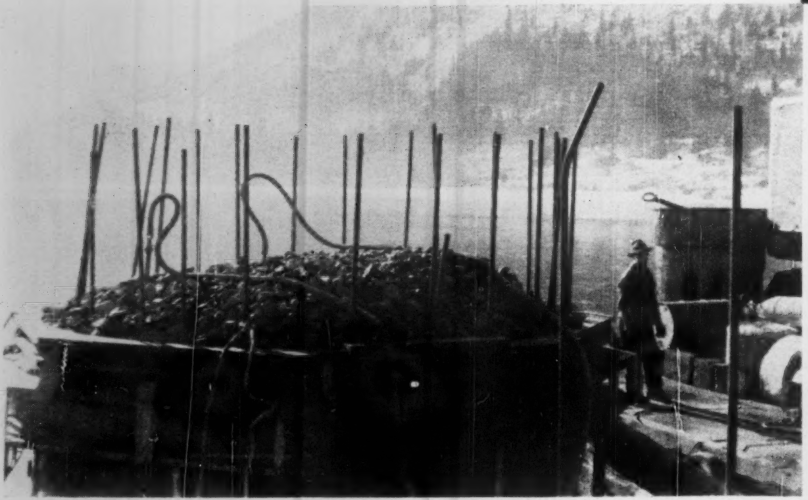

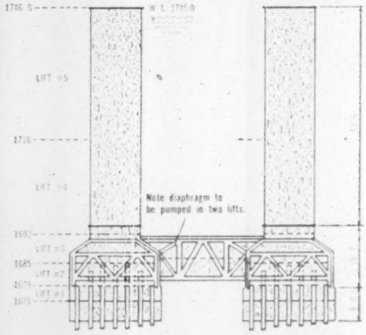

Concrete manufactured by filling forms with coarse aggregate and intruding with sand cement mortar with admixtures.

Poole Engineering Co., Ltd., and Raymond International Co., Ltd.
Prime Contractors

A. B. Sanderson
Consulting Engineer

Owner:
British Columbia Toll Highways & Bridge Authority

a case in point...

2268 cubic yards of Pre-Placed Aggregate Concrete in 70 feet of water, under severe weather conditions (below freezing) and testing to over 4000 p.s.i.

All in a day's work for the Lee Turzillo Contracting Co. who specialize in the difficult, impossible jobs . . . jobs that are man-sized headaches to others . . . and completing the job to the owner's entire satisfaction.

Acting in behalf of the Cementation Co. (Canada) Ltd., the Lee Turzillo Contracting Co. was responsible for the underwater concrete placed in deep-water piers #6 and #7 of the Nelson Bridge over the West Arm of the Kootenay Lake at Nelson, B. C.

Concrete was made by first preplacing the coarse aggregate in caissons without de-watering, then solidified with mortar which included INTERAID.

Remember, the Difference is in Experience . . . our trained personnel will be happy to offer their experience in solving your problem. For further information, write or call

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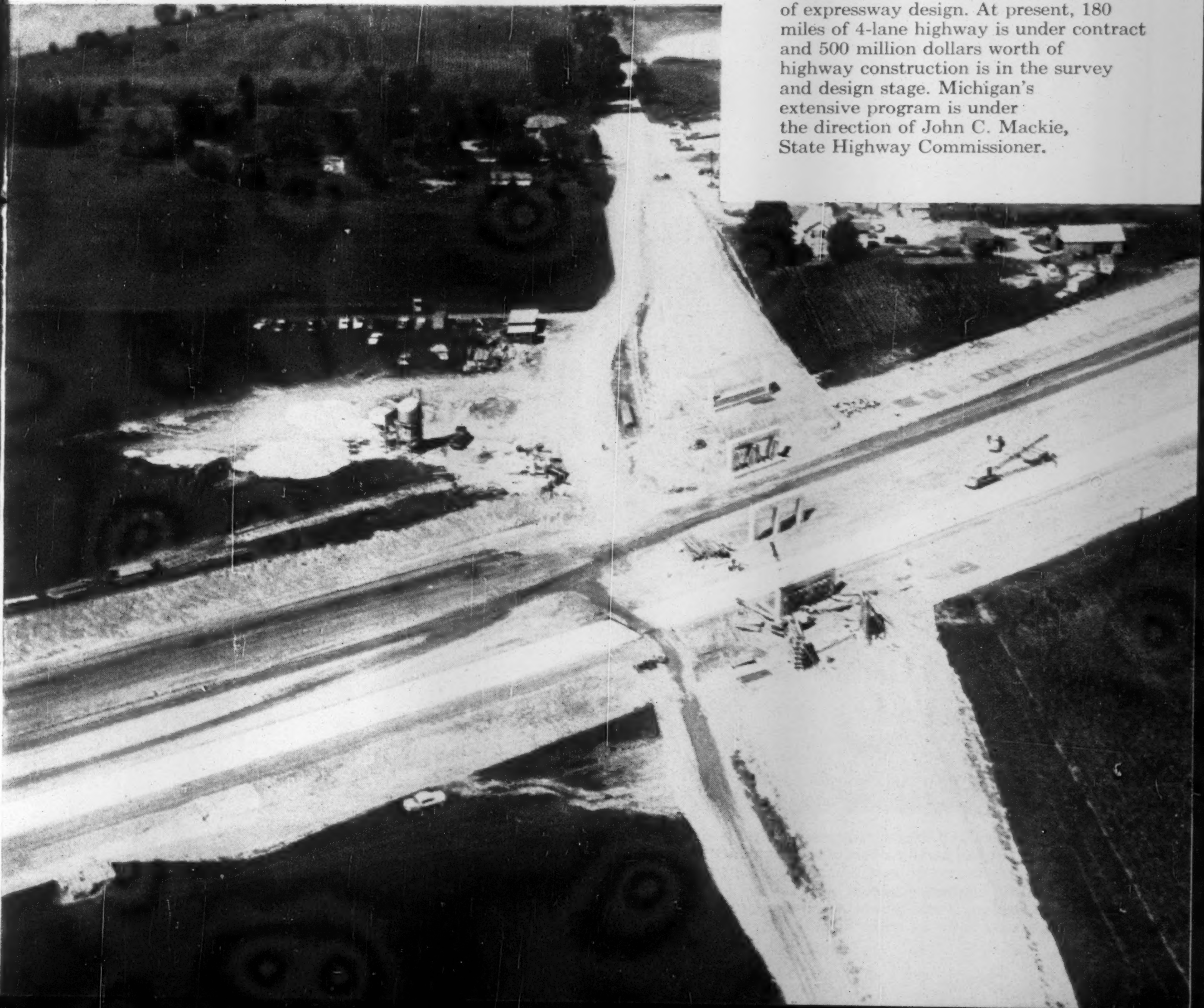
- High Density Concrete

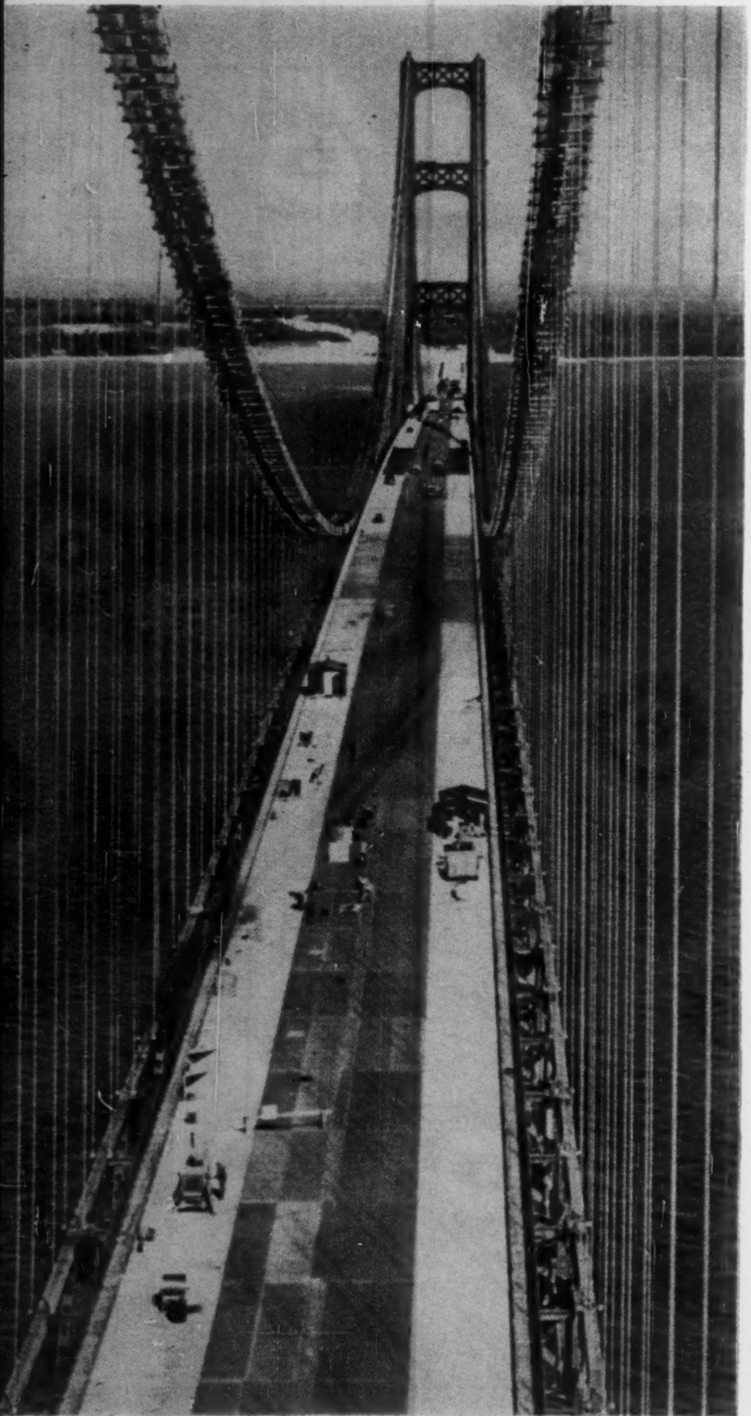
Michigan highway program is really rolling along!

KEEP OUR ROADS ON THE GO

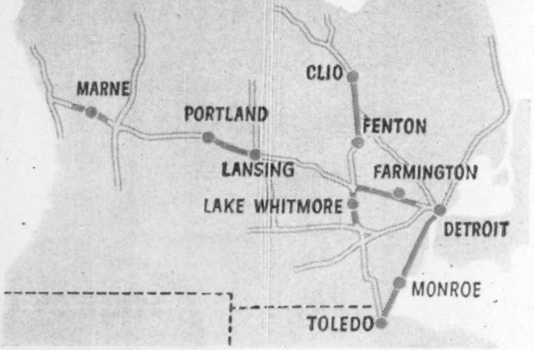
Michigan has already completed and put in operation 170 miles of the 1066 miles of roadway that is to be included in its Interstate Highway Program. A budget of 1¼ billion dollars has been allocated for highway construction and improvements from 1958 through 1962. In these five years, it is expected that 2900 miles of new highways of all classes will be laid, including 580 miles of expressways to be incorporated into the Interstate System, and 325 miles of other arterial highways of expressway design. At present, 180 miles of 4-lane highway is under contract and 500 million dollars worth of highway construction is in the survey and design stage. Michigan's extensive program is under the direction of John C. Mackie, State Highway Commissioner.



...and products of United States Steel



Although the world's longest suspension bridge over the Straits of Mackinac is not technically a part of the Interstate Highway Program, many miles of Routes 23 and 27 approaching this 96-million-dollar marvel will be controlled access expressways incorporated into the Interstate System. Perhaps not as obviously in the highways as in the bridge, steel helps to make both better, safer . . . even possible.



Michigan really rolls along!

34 miles of the Fenton-Clio bypass on Route 23 are practically completed. 28 miles of the Detroit-Toledo expressway (Rt. 24A) have been opened, and work is in progress on approaches into both cities.

23 miles of relocated Route 16, west from Detroit, was opened to traffic last winter.

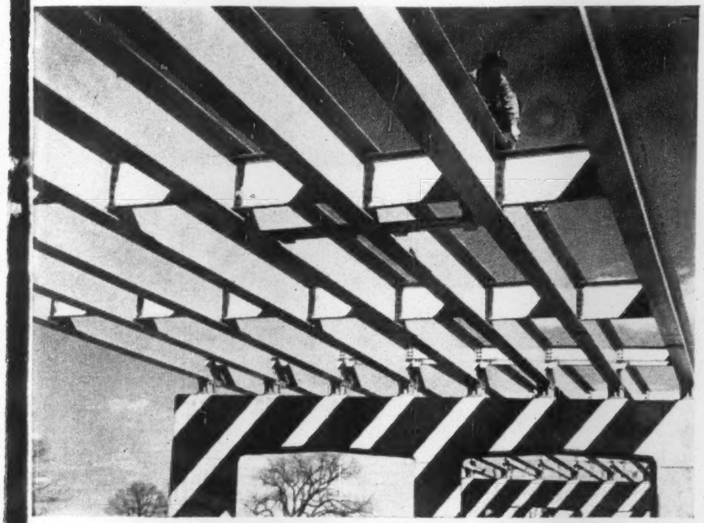
17 miles of Route 16, between Lansing and Portland, is open to traffic.

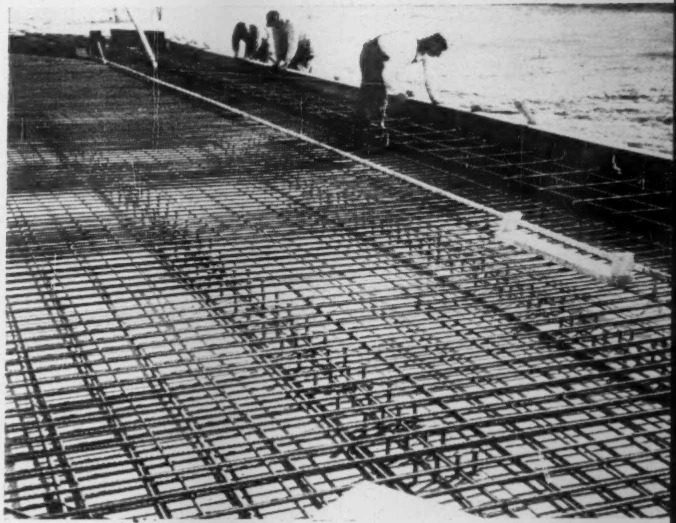
Excavation, grading and the construction of intersections have been started on a 6-mile section of Route 16 in the Portland area.

Lowell Thomas, CBS television and radio star, dramatizes the story of the building of the Mackinac Bridge in *"The Five Mile Dream."* This color motion picture is now being shown in major theatres all over the country. Be sure to see this exciting battle against time and nature when it plays in your local movie theatre.

Lowell Thomas,
star of
"High Adventure
with Lowell Thomas"
seen on CBS-TV

help keep these roads on the go!





It is expected that Michigan's Interstate System will utilize 725 tons of structural steel per million dollars of construction cost. Structural carbon and high strength steels have made the construction of overpasses, bridges and elevated expressways easier and less costly.

KEEP OUR
ROADS
ON THE GO

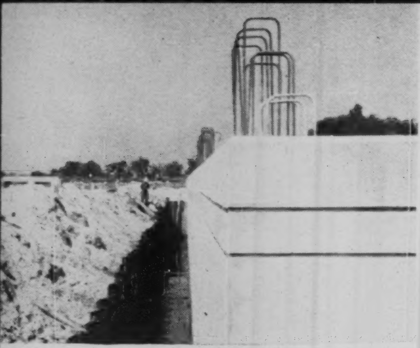
The concrete flooring and piers of a multitude of bridges in the Interstate Highway Program will be stronger and safer because of USS Di-Lok Reinforcing Bars which meet all requirements of ASTM Specifications A-15 and A-305.

At Grand River, southwest of Portland on Route 16, steel helps to do difficult jobs quickly and economically. USS Steel Sheet Piling provides a safe working area in which to reach bedrock and begin construction of pier foundations. When fitted with USS Tiger Brand Wire Rope, hoists, shovels and other earth-moving equipment have the strength and high resistance to abrasion and fatigue necessary for hard service.

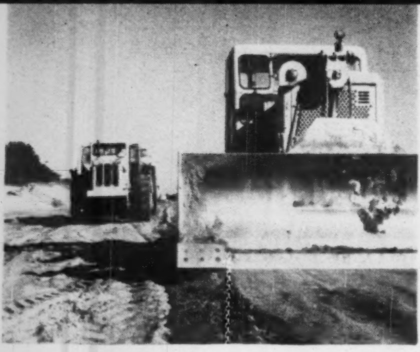
On Route 16, between Lansing and Portland, welded wire fabric goes into place to reinforce the new concrete expressway. American Welded Wire Fabric is made of high-grade, cold-drawn steel and is able to withstand high unit stresses. With it and Universal Atlas portland cements, it is possible to construct concrete slabs 50 to 100 feet long and provide a longer-lasting, smoother-riding roadway.

The interchange of Routes 23 and 57 is typical of the many interchanges which protect the traveler with steel guardrails. Building safety into the highways of the future is the prime concern of today's engineers. USS steel guardrails or galvanized highway guard cable at crucial points will help minimize the consequences of recklessness, and will safeguard traffic at the speeds the highway system has been designed for.

USS United States Steel



For bridge foundations, piers and decking, ATLAS DURAPLASTIC and UNIVERSAL portland slag air-entraining portland cements provide a more cohesive concrete that is fortified against freezing-thawing weather, yet costs no more than ordinary cement. USS DI-LOK Bars, specifically designed to produce better reinforced concrete, assure maximum strength.



Scrapers, dozers, graders and trucks must be capable of working steadily without breakdowns. USS High Strength Steels—COR-TEN, MAN-TEN, TRI-TEN and USS "T-1" Constructional Alloy Steel—all have an ability to stand up under hard, rugged service that involves severe abrasion and high stress resistance. Much of the high performance of today's construction equipment also depends on such parts as TIGER BRAND Wire Rope and SHELBY Mechanical Steel Tubing.

The paving of Route 16, between Lansing and Portland, proceeds quickly. Much of the Interstate Highway System will utilize paving materials furnished by United States Steel—ATLAS DURAPLASTIC air-entraining cement, UNIVERSAL portland slag cement and ATLAS high-early air-entraining cements, or UNIVERSAL and ATLAS portland cements. They ensure a cohesive concrete that spreads and finishes easily.

KEEP OUR ROADS ON THE GO

Only United States Steel can offer you such a complete line of products for highway construction

Special Steels for Construction Equipment: Abrasion-resisting steel • Constructional alloy steels (CARILLOY and "T-1") • High strength, low alloy steels (MAN-TEN, TRI-TEN and COR-TEN) • Grader blades (AMBRIDGE) • Wire rope (TIGER BRAND) • Tubing, seamless mechanical (SHELBY)

Drainage Products: Sectional plate pipe arches (AMBRIDGE) • Culvert sheets, galvanized • Culvert pipe • Culvert pipe, perforated • Road flume—11 Western states only (RO-DRAIN) • Rain leader pipe (NATIONAL)

Bridges and Bridge Foundations: Bridge construction service • Structural steel shapes and plates, carbon, alloy and high strength • Bearing piles, steel H-Beam • Bearing piles, tubular steel (NATIONAL) • Sheet piling • Bridge flooring, concrete-filled grid (AMBRIDGE I-BEAM-LOK) • Bridge sidewalk flooring, T-grid (AMBRIDGE) • Tubular bridge railing (NATIONAL and SHELBY) • Grating, expanded metal • Expansion joints • Bridge nuts, pins and tie-rods • Rivets • Eye-bars • Creosote for pressure-treating bridge flooring and wood piling • Stress-relieved wire and strand for prestressed concrete bridge girders (SUPER-TENS) • Concrete reinforcing bars (DI-LOK)

Pavement Construction Products: Portland cements (UNIVERSAL and ATLAS) • Portland slag cements (UNIVERSAL) • Air-entraining portland cements (ATLAS DURAPLASTIC) • Air-entraining portland slag cements (UNIVERSAL) • High-early portland cements (ATLAS) • White cements (ATLAS) • Concrete reinforcing bars, straight and bent (DI-LOK) • Welded wire fabric for reinforcing concrete (AMERICAN) • Concrete forms • Concrete form insulation • Road-joint assemblies (AMERICAN) • Air-cooled slag, crushed and screened • Air-cooled slag, uncrushed • Granulated slag

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USE THIS COUPON FOR FAST ACTION

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525 William Penn Place
Room 5673, Pittsburgh 30, Pa.

Please send me the USS Highway Products Catalog

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ROADS
ON THE GO
UNITED STATES STEEL

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Company________________________________

Address________________________________

City________________Zone______State__________

United States Steel

USS

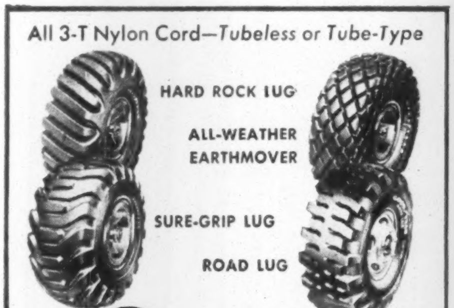
Look for this nearby Goodyear dealer sign for better tire values —better tire care.

COUNTLESS TONS. Its $400,000,000 price tag attests the scope of this job—which runs nearly 1/5 the way around the world! Up to their ears in countless tons of muck, muskeg, rock, shale and dirt, the contractors are coming up with a minimum of 22-foot pavement on 5- to 10-foot shoulders—and only 271 miles of "impassable" gaps still to go! Shown here is an all-mountain sector in British Columbia which previously boasted *no roads at all*. From coast to coast, Trans-Canada's hard-won miles have felt the sure imprint of Goodyear 3-T Nylon Cord off-the-road tires.

BLITZING LAST BOTTLENECKS
TO COMPLETE 4,770-MILE TRANS-CANADA HIGHWAY!
GOODYEAR IS THERE!

Triple-Tough 3-T Nylon Cord—
the extra durability exclusive with
Off-The-Road Tires by Goodyear!

All 3-T Nylon Cord—*Tubeless or Tube-Type*



TEMPERED LIKE STEEL!

Like steel, tire cord must be *tempered* to be tough. Goodyear's exclusive process, involves Tension, Temperature and Time, *triple-tempers* cord to make it TRIPLE-TOUGH—for longest tire life, lowest cost-per-yard.

From treads to beads, Goodyear off-the-road tires bring you the most advanced and experienced design, engineering and construction known today.

High among Goodyear's exclusive advancements is TRIPLE-TOUGH 3-T NYLON CORD—called the greatest tire *saver* in 23 years.

Only Goodyear off-the-road tires have it—yet they cost no more than other makes built with ordinary Nylon cord.

And on-the-job savings have been spectacular—on some of the toughest jobs on earth!

Try TRIPLE-TOUGH 3-T NYLONS on *your* toughest jobs. You'll agree that "Goodyear is There"—in every way! Goodyear, Truck Tire Dept., Akron 16, Ohio.

Buy and Specify
GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

All-Weather, Road Lug, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

"PRODUCTION and PORTABILITY ..Sold us on MADSEN"

says—
INTERSTATE AMIESITE
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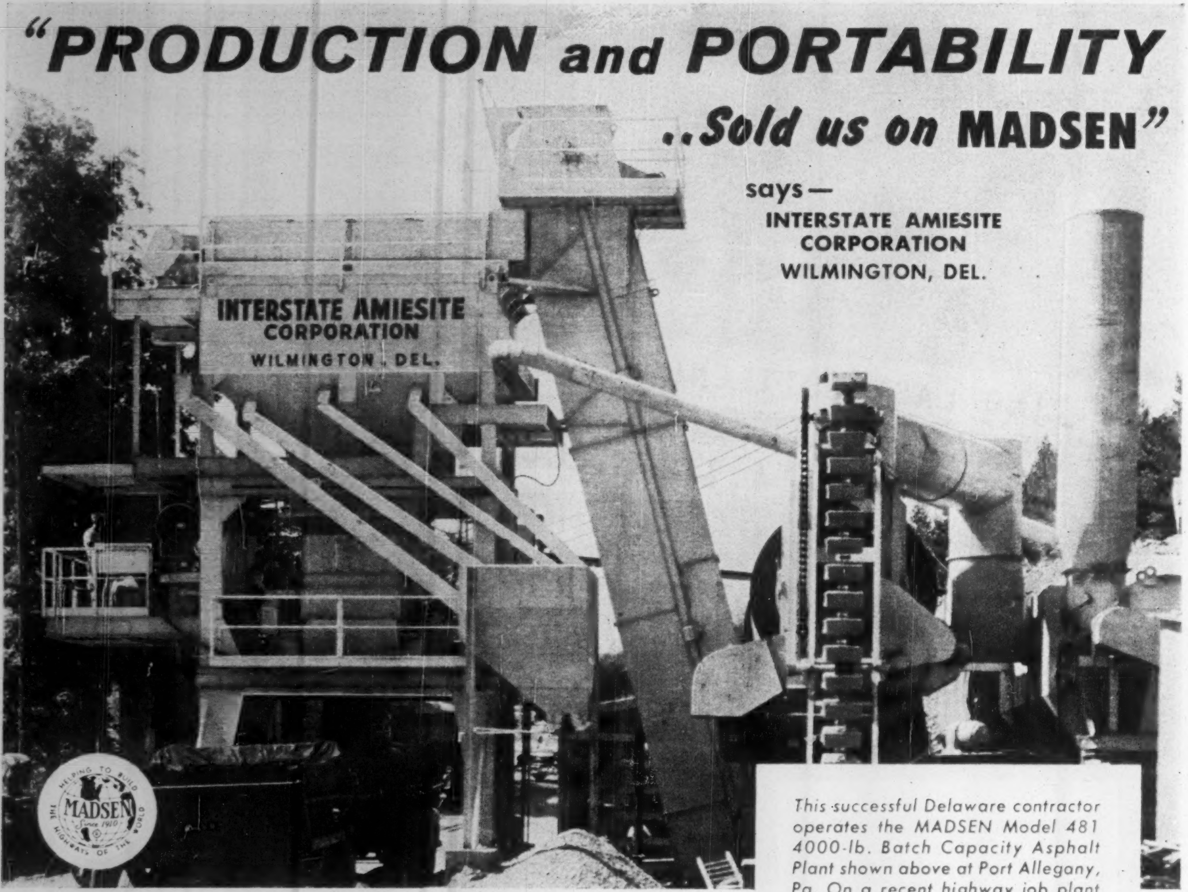

This successful Delaware contractor operates the MADSEN Model 481 4000-lb. Batch Capacity Asphalt Plant shown above at Port Allegany, Pa. On a recent highway job plant produced 25,000 tons of bituminous mix with a daily production rate up to 1500 tons. Compact, unit-construction and complete portability enables owner to quickly dismantle plant, move and set up again . . . where the big jobs are.

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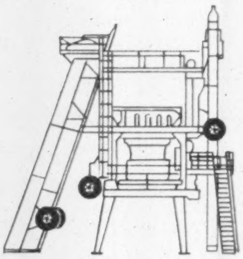

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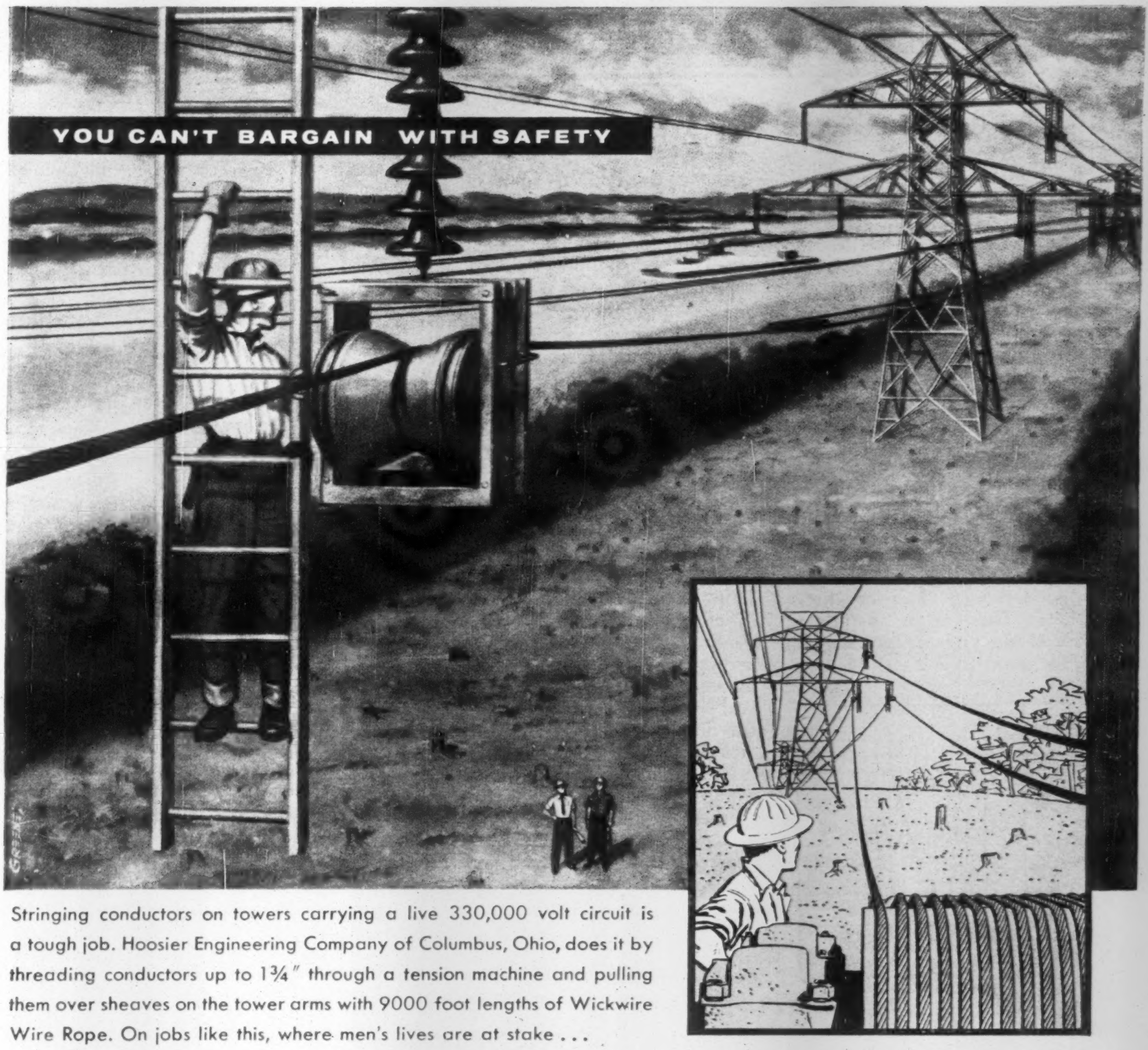
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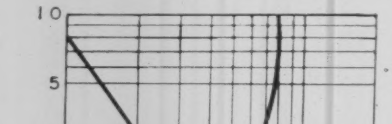
5924

Limit Is Seen on Reservior Building

SIR—The present trend in reservoir construction for all purposes is as yet steeply upward, but according to ENGINEERING NEWS-RECORD (ENR Feb. 13, p. 205) the era of large dam-building for hydro power, flood control, and irrigation may be nearing its close.

The quantity of water made available by the existing storage capacity may be judged by study of the performance of typical reservoirs. A tabulation was made of a group of reservoirs, listing for each separately the sum of all plus and all minus changes in storage.

The total of the changes in storage, in acre-feet for a period of years, divided by the number of years, gives the mean annual regulation. This figure, divided in turn by the usable capacity of the reservoir, gives the regulation in ratio to the capacity. These ratios are plotted in relation to the capacity expressed in terms of the annual flow.



Curve A shows that reservoirs of about 0.15 year storage have their full capacity utilized each year. Reservoirs with usable capacity equal to a year's mean flow are found to have about 40% of their capacity utilized in an average year.

Curve B (derived from curve A) shows the regulation in percent of mean runoff. When so expressed the regulation increases with the storage ratio, approaching 80% for large hold-over reservoirs. The annual regulation cannot, of course, exceed the annual runoff.

Water control by storage follows a law of diminishing returns. Each successive increment of control desired takes a larger amount of reservoir storage space than the preceding increment. On a hydrograph of stream flow the peaks and troughs are roughly triangular in shape. To store enough water to reduce the peaks and fill the hollows by say 20% requires much more than twice as much reservoir capacity than to reduce the peaks and fill the troughs by 10%. The control of the discharges varies as the ordinate, but the storage required varies as the area under the hydrograph. The net effect is illustrated by curve B. Storage capacity equal to a year's flow can regulate almost 45% of the flow, but doubling the capacity increases regulation only by one-third.

Thus there is a limit to the amount of storage that can be built with prospect of useful return. In the United States a considerable increase in water supply can be obtained for use by reservoir development, but places in the West already may be nearing the limit.

W. B. LANGBEIN
U.S. Geological Survey
Department of the Interior
Washington, D. C.

Concrete for Prestressing

SIR—A letter by G. L. Bilderbeck (ENR Jan. 16, p. 11) questioned the actual strength of concrete used in prestressed girders and beams.

We will most certainly agree that control of concrete quality is essential to prestressed concrete. High-quality and high-strength concrete is obtained consistently by prestressed concrete manufacturing plants. Several plants of which I have personal knowledge turn out concrete consistently over 6,500 and 7,000 psi 28 day cylinder strength.

Field or job-site manufactured prestressed concrete can, of course, vary in quality from job to job but in those cases with which I am familiar, the required concrete strengths and quality have been obtained or exceeded. Rigid control of job-site work is essential.

Grouting of post-tensioned concrete is most important, especially where subject to freezing and thawing, and the techniques and equipment used must be such as to insure complete filling. Such equipment and techniques are now available.

Prestressed Concrete Institute specifications require a minimum 28 day strength of 4,000 psi, and present U.S. practice consistently exceeds this.

BEN C. GERWICK, JR.
President
Prestressed Concrete Institute
San Francisco, Calif.

•

SIR—Mr. Bilderbeck's letter need not be cause for alarm. The Orlando school roof collapsed, but at about the same time a cast-in-place job of five stories in Jackson, Mich., suffered a similar fate. We have to learn, and many times in the hard way.

To say that 5,000 psi concrete can not be placed on the job and that we can expect only around 3,000 psi is beyond my understanding. A qualified supervisor can tell one from the other at a glance. I have recently completed supervision of seven multistory buildings in which the lower stories required 5,000 psi concrete in columns. By watching the water-cement ratio, I'll vouch for the fact that we got it 100% of the time.

A. R. J. SCHNEIDER
Wheaton, Ill.

•

SIR—Mr. Bilderbeck's comments presented a very pessimistic view of prestressed concrete because of the failure of a roof in Orlando, Fla. The subject needs a more complete analysis.

Everyone thoroughly acquainted with the operation of prestressed concrete casting yards knows that the concrete strength is up to specification whether it be the common 5,000 psi, occasional 6,000 psi or the 8,000 psi standard with one plant. Placing technique is different from that for reinforced concrete to get these results. Proof is available in the cylinder tests made at every casting yard and also in the cylinder tests made by government and independent laboratories representing the customers.

The ENR articles referenced in the letter clearly state that "defective de-

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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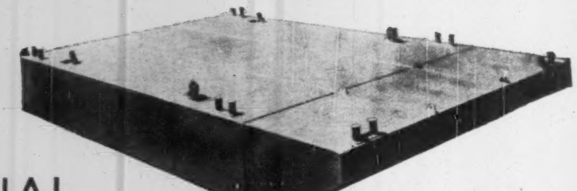

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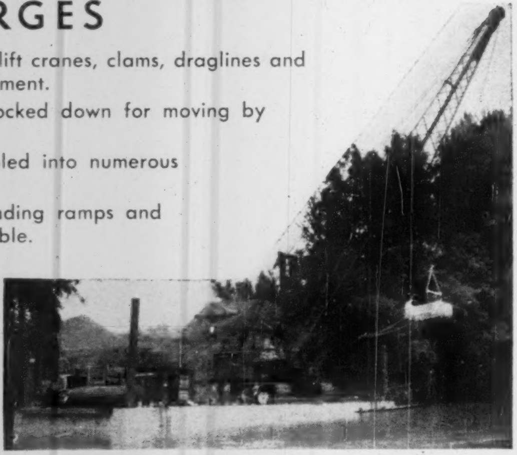

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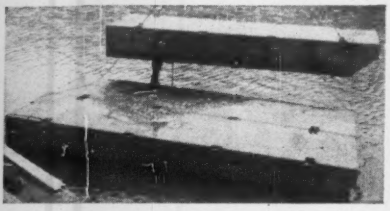

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sign of concrete block walls and prestressed concrete roof slabs is . . . responsible for the failure." There is no mention whatsoever of faulty material.

Extreme temperature changes must be properly provided for in any material. They are no more of a problem in prestressed concrete than in any other elastic material. Prestressed concrete is not subject to "brittle failures" like those that caused the collapse of the steel girder bridges described in ENR Feb. 8, 1951, p. 23 and ENR April 26, 1951, p. 46.

From 1949 through 1957, ENR alone carried 16 articles on failures of structures built of "time-tried" standard materials. Some are explained by inadequate design, poor material, improper erection, and some, like the structural steel bridge over the Bluestone River in West Virginia, which failed in March, 1949, are still mysteries. If one failure due to "defective design" is cause for rejection of a building material, there would be no more construction.

The philosophy in the following excerpt from the editorial page of ENR June, 8, 1950, must always be applied to all bulding materials: "The lesson from Bluestone, therefore, is for heightened respect for the meticulous care and the minute analysis that every engineering jobs demands."

H. Kent Preston
John A. Roebling's Sons Corp.
Trenton, N. J.

Engineers Left Out

Sir—In your article on the prestressed concrete beams for the 21-story Norton Building in Seattle (ENR April 17, p. 25) you left out the names of the prestressing consultants, T. Y. Lin & Associates, of Los Angeles, and Arthur R. Anderson, of Concrete Technology Corp., Tacoma, Wash.

Myron Goldsmith
Skidmore, Owings & Merrill
San Francisco, Calif.

CALENDAR

American Society for Testing Materials, 61st annual meeting, Hotel Statler and Sheraton Plaza Hotel, Boston, Mass., June 22-27.

American Society of Heating and Air Conditioning Engineers, semi-annual meeting, Pick-Nicollet Hotel, Minneapolis, Minn., June 23-25.

American Society of Civil Engineers, Multnomah Hotel, Portland, Ore., June 23-27.

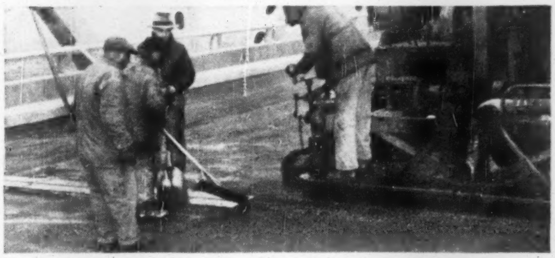
Association of Women in Architecture, national convention, Town House Hotel, Los Angeles, Calif., June 30-July 2.

American Institute of Architects, annual convention, Hotel Cleveland, Cleveland, Ohio, July 7-11.

Construction Specifications Institute, annual convention, Hotel Cleveland, Cleveland, Ohio, July 5-7.

Three Barber-Greene Tamping-Leveling Finishers easily pave over expansion joints jutting 2" high on the 5-mile, 6-lane Calumet Skyway Bridge. The contractor, Armen Avedisian, V.P., The American Asphalt Paving Company, Chicago, said, "All three Barber-Greenes did a perfect job, although they are 2, 18 and 19 years old."

Paving over joints a problem?

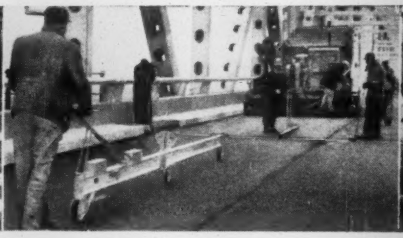


As any paver passes over expansion joint, screed rides on joint. This does not interfere with compaction with Barber-Greene Finisher. Independent B-G Tamper compacts material right up to and away from obstruction.

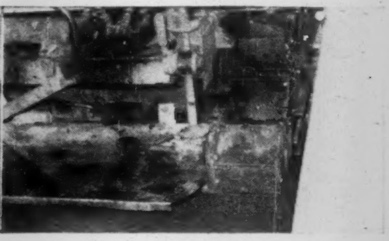
Paving over jutting bridge expansion joints . . . over protruding manholes . . . over railroad and streetcar tracks . . . paving the faces of dams, at angles too steep for negotiating on foot . . . automobile race tracks, demanding extreme accuracy of surface contour . . . test tracks with steeply banked, negatively crowned curves . . . these and many other problems have been successfully solved by the Barber-Greene Tamping-Leveling Finisher for twenty years. The new Model 879-B is establishing even higher standards of performance. Write for information.

58-35-F

Expansion joints were 2" high. Shown here before pavement was laid by Barber-Greene Finishers.



Bumpometer shows smooth surface, before rolling, even at point where screed was when crawlers passed over joint.



Barber-Greene laid and compacted material right up to concrete curb.

Barber-Greene B G

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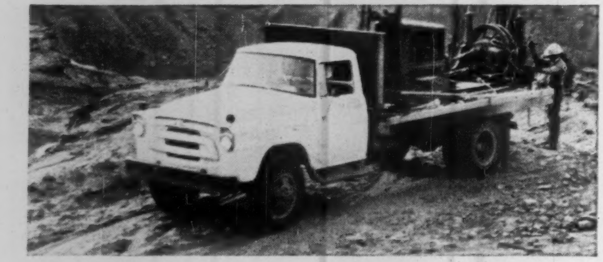

You pick the job—drilling post holes for electrical transmission lines, on-the-spot maintenance, or pickup and delivery of men and materials—there's an INTERNATIONAL ready to help complete it quicker at least cost. Conventional or cab-forward design with three or six-man cab options. Dump, flatbed, stake, or specialized bodies, on single rear-axle chassis with GVW up to 36,000 lbs., to meet any requirement anywhere:

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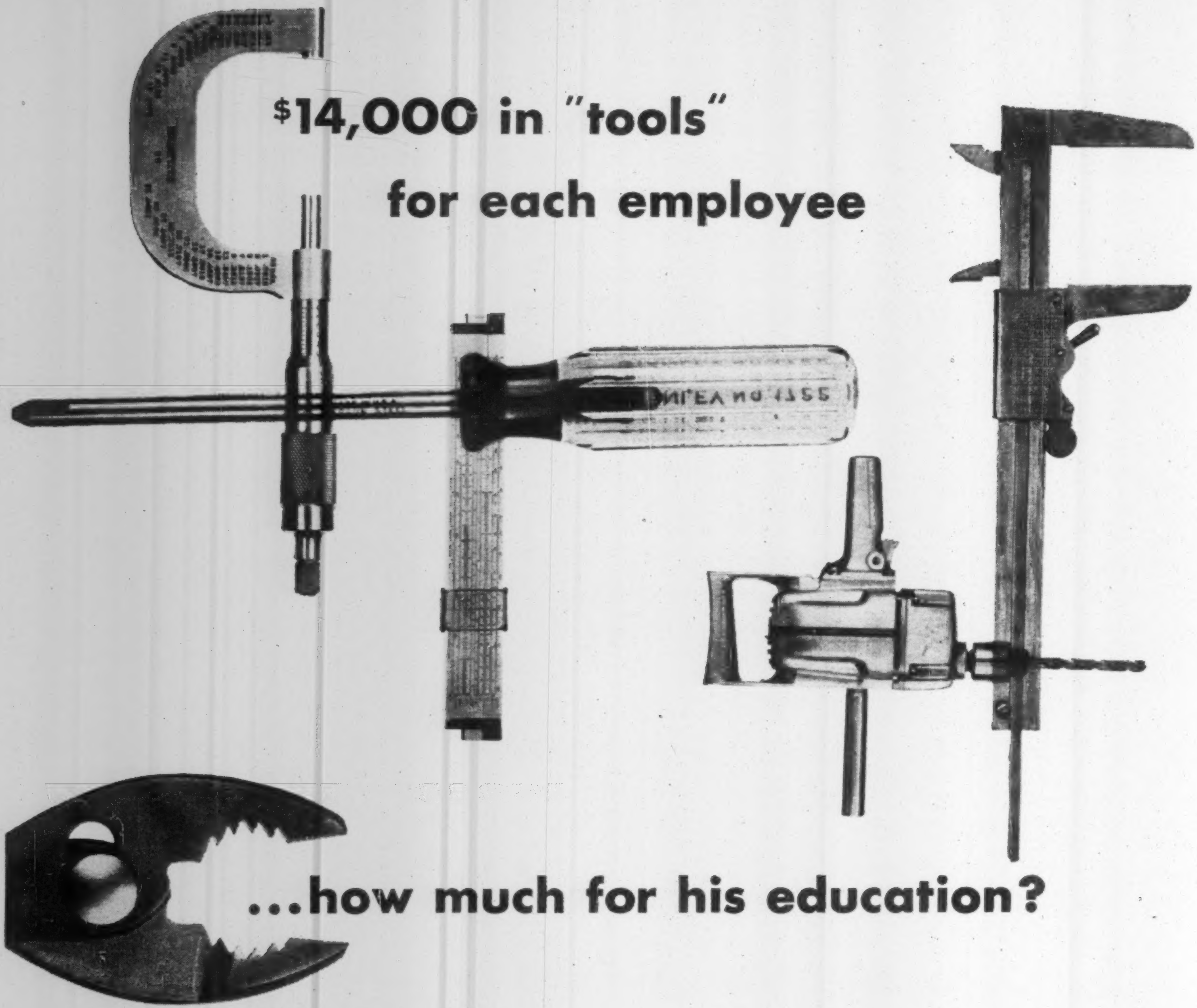

Today, business invests an average of $14,000 in each employee's job. The question for businessmen is: Are we training enough people who can hold down these jobs? Schools are the answer. And it's simple self interest to help community groups get the teachers and equipment schools need. Shortage right now: 200,000 classrooms, 165,000 teachers!

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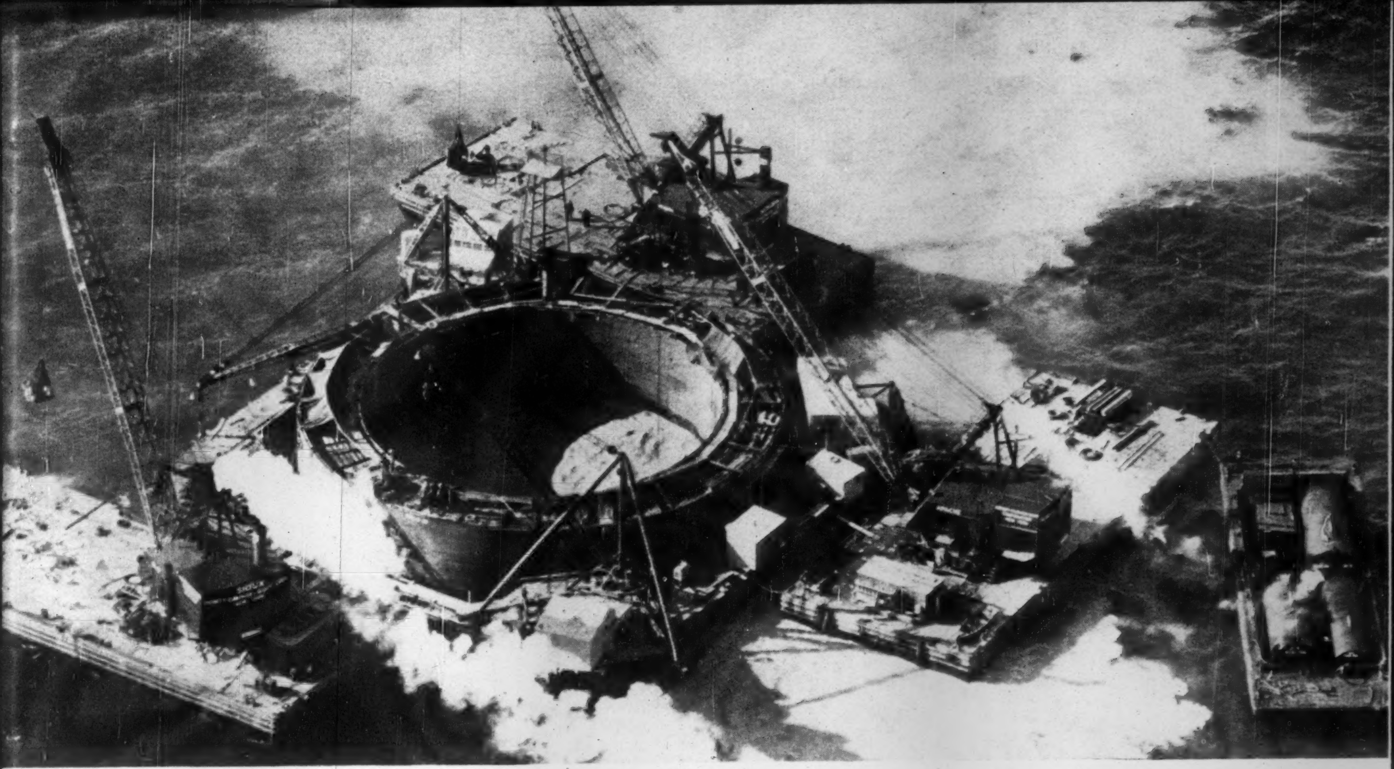

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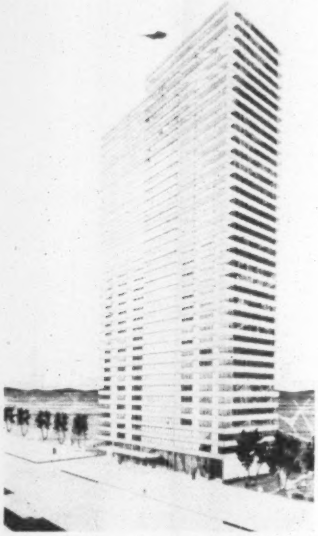

Executive House—Architect: Milton M. Schwartz & Associates, Chicago. Structural Engineer: Miller Engineering Co., Chicago. Concrete Contractor: C. A. Tharnstrom & Co., Skokie, Illinois.

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CONTENTS

NATIONAL AFFAIRS

AGC Is Getting a New Look 25
Levittown III: Schools Are on the Builder 28
Engineering News-Pictures 29
Uniform Road Practices Wanted 30
Two Large Niagara Contracts Awarded 30
Waste Treater Puts on Show 33
Water Well Runs Wild 33

FEATURES

Best Plan Chosen for 'Quoddy Tidal Power 36
Triangle Beams Are Designed for Show 42
A Simple Way to Interpret Data 47
Can We Identify Non-Hydrologic Water? 55

RESEARCH

Experimental Tractor Is Turbine Powered 57
Driverless Tractor Is Shown to Public 57
Asphalt Molecular Structure Is Probed 58

FIELD AND OFFICE

Steel Bracing Aids Toll Plaza Treadles 62
Jet Engine Fails as Snow-Removal Device 64
Standby Water Line Put in Deep Freeze 64
Stop Sign Under Light Cuts Accident Rate 65
Surveyors Speed Job With Helicopter 66
Vacuum Pump Recovers Oil Spilled on Water . . . 66

INTERNATIONAL

Goatskins and Ox-carts Tackle Big Job 71
Electronic Devices Locate Water Main Leaks . . . 74
World Bank Loans Italy $75 Million 74

NEW PRODUCTS

Dozer Blades Speed Spreading 79
Gamma Meter Checks Underwater Radioactivity 80
Materials Handler Comes in Four Sizes 80
Manufacturers Publications 87

MEN AND JOBS

Transportation: A Challenge for Harmer Davis . . 97

BUSINESS AND FINANCE

Capital Outlays to Slip 17% This Year 134
Lease-Purchase Program Ends 135
Voters Approve Big Waterworks Bond Issue 135
Public Works Bill Faces Uphill Fight 136
Texas Road Agency Orders "Buy American" . . . 136
AEC Gives A-Power Program to Congress 137

LABOR

Senate Drafts Mild Labor Reform Bill 139
Big Boston Strike Is Settled 140
Sheet Metal Workers Boycott Is Halted 140
NLRB Sidesteps Brown-Olds Remedy 141
Workers May Get a Tax Ruling 141

Reader Comment . . 12
Calendar 14
Washington Observer 23
Legal 89
Obituaries 107
Books 108
Unit Prices 110
Materials Prices . . . 112
Construction Reports . 113
Scoreboard 131
Editorials 152

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THE CONSTRUCTION WEEK

NEW MILITARY CONSTRUCTION AHEAD—Projects costing $1.7 billion will be authorized this month. Armed services committees of the two houses hope to conclude hearings within a few days on $1 billion of new military works for the Air Force. They've already heard testimony on $350 million for the Army, $300 million for the Navy and $50 million for other projects of the Defense Department. Money to finance the new construction will come out of the $1.7 billion military appropriation bill that went to Congress on Monday of this week. The request is about $155 million larger than the figure in the Jaunary budget.

CRANE FALLS 80 FT—Investigators are still trying to learn why a 60 ton crawler crane toppled from a street level trestle 80 ft into an excavation pit last week. The accident occurred in New York City's Wall St. district at the Chase-Manhattan Bank headquarters $121 million project. So far, overload and mechanical failure have been eliminated as possible causes of the accident which killed the crane operator.

OPEN SEASON ON CLEAN STREAM LAWS—Constitutionality of the enforcement powers granted stream control boards is under serious fire in two states. Two Ohio cities told a county court the Water Pollution Control Board's authority to file suit restraining the cities from dumping raw sewage is an unlawful delegation of powers by the state legislature. The Ohio Supreme Court has never ruled on this question. Pennsylvania is appealing to its Supreme Court a county court ruling declaring unconstitutional the Water & Power Resources Board's authority to control streams and dams in the commonwealth.

TROUBLE COMING?—William Levitt, master-home-builder, said something in describing his planned Levittown III, in New Jersey (see p. 28), that could cause him trouble before it's built. Asked if it would be a racially integrated community, he said: "Our policy on that is unchanged. Levittown I and II are white communities." By weekend, there was evidence his statement had not gone unnoticed. The National Association for the Advancement of Colored People called it to the attention of New Jersey's Governor Meyner.

ONE LAW INSTEAD OF MANY—Congress will put all the highway laws into one package sometime in the next few weeks. There won't be any major changes written into the new measure—just updating and packaging all the highway laws into one bill. Some of the present laws date back to 1916. Hearings are now being held.

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WASHINGTON OBSERVER

- **Democrats okay new public works projects**
- **Committee raps contractors on too-fast spending**
- **Another budget hold-up threatened**
- **Plant and equipment decline seen into '59**

● **The Democrats are still pressuring President Eisenhower hard on public works spending.** It showed this week in the public works appropriation bill approved by the powerful House Appropriations Committee.

Chairman Clarence Cannon added 44 projects to the bill that hadn't been included in the Administration's request. Forty are for the Corps of Engineers and four for the Reclamation Bureau. Total cost of the 29 added construction starts will be more than $400 million—$16 million is sought for the coming year.

All told, the House committee approved $849.5 million for 396 projects with an estimated total cost of $11.8 billion for fiscal 1959. Chairman Cannon called particular attention to his rejection of the first Eisenhower budget requests as being too low and too slow. As a result the Engineers upped their figures for the year by $125 million, and Interior by $78.8 million. Congressman Cannon objected that the Corps of Engineers original request would have slowed down 124 of 146 going projects.

● **The Appropriations Committee rapped contractors for being "unwilling to gear their earnings to the amount of money Congress makes available" for the projects they are working on.** It directed the Corps and Interior not to transfer funds to a project in excess of 15% of the amount available for the project at the beginning of the fiscal year.

The committee said it won't approve additional transfer requests unless the contractor amends his bid downward "so the government may realize some of the . . . savings the contractor expects to realize by a speed-up in construction."

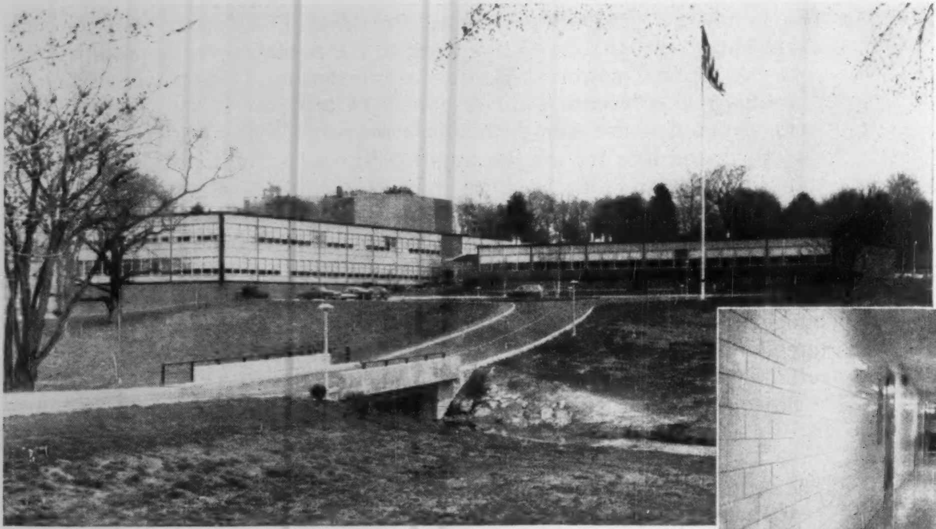
● **Congressman Cannon took another swipe at proposals to change the method of stating budget needs for public works projects.** He said he would send next year's budget back—as he did this year's—if officials brought in figures representing only one year's needs. He is against the idea of appropriating only enough money for the 12 months under consideration. This will be done in the hope of eliminating all carry-over funds that frequently pile up under the present system.

A bill that would authorize this kind of budgeting has passed both houses of Congress. But powerful congressmen—like Clarence Cannon—who favor the present "timeless" appropriations—have so far prevented its final approval.

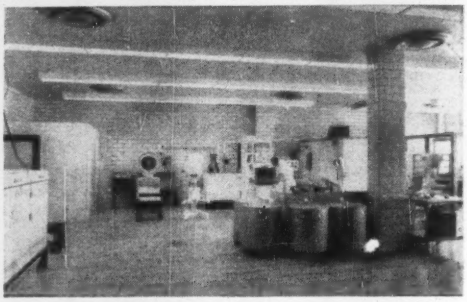
● **The decline in business spending for new plant and equipment is likely to continue into the first half of next year,** in the view of the professional staff of the Joint Economic Committee of Congress (see p. 34). The staff supplies Congress with business outlook studies, based on public hearings and analysis of economic trends. In a memorandum to Rep. Wright Patman, chairman of the Joint Committee, the staff says the annual rate of plant and equipment outlays may be $10 billion lower in the fourth quarter of this year than at the peak of $37.7 billion, reached in the third quarter last year.

Works of Wonder

Wonder Bread Builds For Tomorrow With Erection of Distinctive Office-Research Laboratories



WONDER-LAND of Continental Baking Company is situated on 25-acre tract near New York City. Note below the gleaming walls which add clean, efficient look to product development laboratories.



● Continental Baking Company's leadership finds new expression in the streamlined construction of its million dollar headquarters and research laboratories in Rye, New York.

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General Contractor
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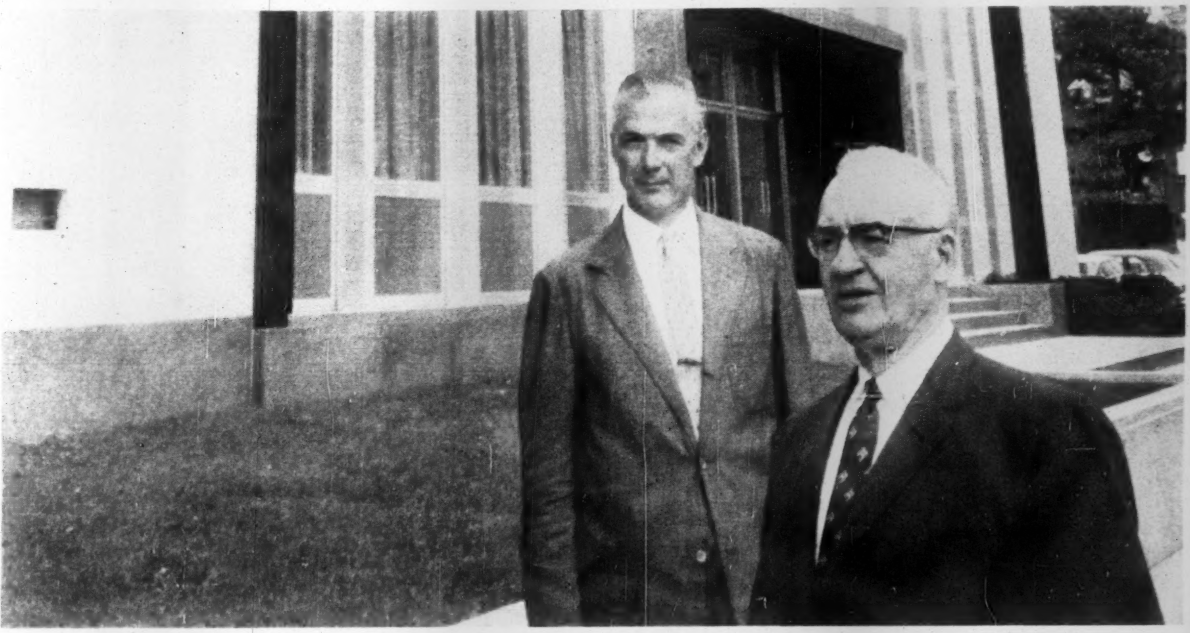


NEW HOME for Associated General Contractors. But that's not the only change . . .

AGC's Getting a New Look

Sturdy as an oak, and almost as slow to spread its limbs: That's a capsule description one observer offered last week of the Associated General Contractors of America as it has existed up to now.

But last week the 60-man (and woman) headquarters staff of the 40-year-old organization was tidying up a handsome new building (picture). And this week formal dedication of the building took place Tuesday, with Vice President Richard M. Nixon performing as featured speaker.

With its new headquarters building dedication, AGC, a sometimes criticized organization that speaks for a rather important segment of the construction industry, seemed to be rededicating itself.

Many have tended to underrate the importance, position and influence of the AGC. That attitude is a direct result of a majestic silence the association has had as a matter of policy.

AGC officers and the national staff have refrained from saying anything officially about important construction problems—except when the problems directly concerned the general contractor. And sometimes not even then.

This doesn't mean AGC fell down on the huge job of working to attain its main objectives of the first 40 years. Its reticence was not allowed to interfere with progress toward major goals. Since November 1918, when meetings in Chicago gave birth to the new organization, the AGC has consistently and carefully selected its objectives and labored steadily to achieve them.

Results of the 40 year effort are readily apparent:

- General contractors have gained recognition as leaders not only within the construction industry but also in their communities.
- Open competitive bidding for public works has become almost universal practice, and the virtues of placing a general contractor in complete charge of a job has been as widely accepted.
- Construction and building trades unions, both nationally and locally, have learned that they can rely on agreements with the AGC and its 125 chapters and branches on wages, working conditions and jurisdictional disputes—and that they can cooperate on programs of accident prevention and apprentice training.

Topping all these gains is the fact that AGC has established itself as spokesman for the general contractors of the country and an authoritative source where lawmakers and agencies can get information on pending legislation or regulations affecting construction.

These accomplishments have been attained while the association held tight to its policy of sticking its nose into nobody's business except the general contractors—and even in this limited sphere never making a statement until all the eggs were hatched.

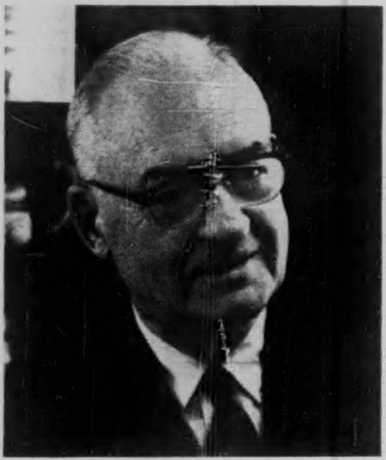
The conservative policy may have been a good thing—even necessary.

1. Out of Its Shell

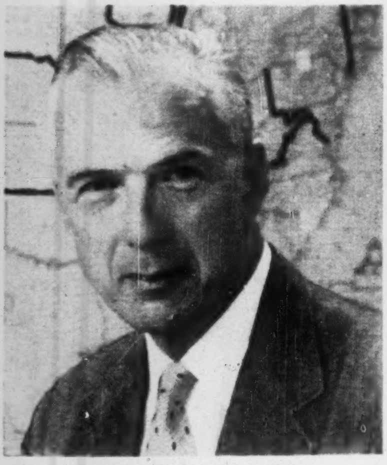
AGC leaders have been taking a fresh look in the last few years at their association's position in the national economy. New blood and new ideas have opened association doors to more alert and more receptive contact with the public.

Changeover to the new attitude got its start in 1956, when then vice president Lester Rogers invited the press to interview highway experts from all over the country at a Washington confer-

. . . Here are the top officials of Associated General Contractors



JAMES D. MARSHALL
Executive Director



WILLIAM E. DUNN
Assistant Executive Director

DONALD A. BUZZELL
Manager, Heavy Construction Division

ence. That was just 24 hours in advance of the signing of the highway act of that year. Until then, a big AGC press conference was unheard of.

Other press conferences followed inside a year—on business conditions with AGC's 1956 president, Frank Rooney, and on labor legislation, with Les Rogers again. This signaled the final lifting of the ban against the give-and-take of open questioning.

This doesn't mean there has been any mad rush on the part of AGC to take the public into its confidence. But the board of directors, officers and responsible staff officials are moving gradually toward broader and closer AGC relations with the public and with the many-sided construction industry.

2. A Bigger Lever

The gradual shift to an open-door policy, of course, is not just for the benefit of the public. The change is dictated by enlightened self-interest, as any vocal AGC member will be happy to tell you. AGC leaders feel the association is now big enough and strong enough to use a longer and heavier lever to attain its ends. The rest of the construction industry, public officials and the public respond more quickly to AGC leadership if they know what AGC is doing—and what the general contractors think is best for the country.

Actually, AGC has nothing in its long record that members would want to keep hidden. From the outset, the men who founded the association and their successors have aimed to serve the public interest first, in the honest conviction that what was best for the public would in the long run prove best for their own business.

Another gain from the open-door policy is likely to be a further spurt in membership. AGC is making no membership campaign. It doesn't need to: The more than 7,000 firms now on the rolls do most of the work in the United States and a good chunk overseas. With its new $700,000 building bought and paid for largely by a healthy untouched reserve of cash in the bank, the association has no need to scratch for money. It will continue to scrutinize membership applications carefully to be sure applicant firms meet the stiff requirements of two years' successful construction activity and vouched-for skill and integrity.

Past experience indicates a further rise in membership even without a membership drive. In 1937, after long urging by W. A. Klinger and a number of other veteran members, AGC adopted a resolution that opened the door to national AGC activity in the labor relations field. Within 18 months, membership started upward from a depression low of 2,200 to better than 2,700 by Pearl Harbor day and 3,000 a year later. At the end of the war, enrollment began climbing again at a fast pace to its present 7,000-plus.

3. Established Labor Policy

Labor relations are only one aspect of AGC activity, but their critical importance places them near the top of the association's many functions. James D. Marshall took over the new labor relations unit as manager in 1937 and remained in charge until he moved up to the post of executive director in 1953. His successor was William E. Dunn, whom Mr. Marshall had brought in six years before as assistant manager. Mr. Dunn became assistant executive director in the 1953 reorganization of the AGC staff. Edward T. Kelly heads the department today, but Mr. Dunn is still the responsible AGC staff officer on labor relations—and on legislative matters as well.

W. A. Klinger's resolution of 1937 set AGC's basic policy in labor relations. The policy has been interpreted and clarified in application since then, but there never has been any need to change the principles expressed in the 21-year-old document.

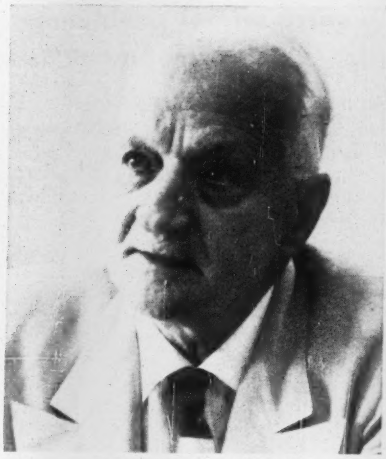
AGC policies are laid down by the governing board, made up of national officers and directors elected by the membership (with the advice of an advisory board that includes all living past presidents). Within the framework of these policies and the defined fields in which they are to be applied, the national officers and headquarters staff carry on the activities of AGC.

The policy protects the rights of members to adhere voluntarily to agreements handled under chapter management; it specifies that contracts be clearly limited to members who accept them. It also provides for a continuing AGC committee to study labor conditions.

4. Headquarters Staff

The staff is organized to serve members in the separate categories of construction that general contractors operate in. The organization has three divisions: building, highway and heavy (heavy includes railroads). Each division serves a large group of member firms, both individually and through the chapters and branches they belong to. Overall, allowing some duplication

JAMES M. SPROUSE
Manager, Highway Division



WELTON A. SNOW
Manager, Building Contractor Division

for many firms that operate in more than one category, the AGC has nearly 3,900 member companies in the building division, more than 3,000 in highway. There are almost as many in the heavy construction and railroad division, with 2,600 heavy outfits and more than 300 railroad specialists.

Welton A. Snow is the staff veteran among division heads. He has been giving expert leadership and guidance to the building group for years. The highway division got a new manager last year, when James M. Sprouse moved there from his post in the heavy-railroad division to take over the big job of expediting contract work on the nation's new $100 billion roadbuilding program. His assistant, Donald A. Buzzell, moved up to take Mr. Sprouse's place.

Rounding out staff activities are the labor relations department and legislative service, where AGC veteran Burt F. Knowles, has done valiant work through many sessions of Congress.

Helping in another field is Francis E. Twiss, engineer advisor. His work in the last three years has encouraged the growth of construction engineering courses in U. S. colleges.

Behind AGC in all relations with the public and with the communication media stands the public relations department. It's headed by William G. Dooly.

These staff people, plus administrative secretary Charlson L. Mehl, are the representatives of AGC that Washington sees from day to day. They serve the managers and secretaries of the 125 chapters, who often call on headquarters for aid or advice. AGC's reputation in the national capital and around the country is pretty largely the result of work done by these representatives and their predecessors.

5. Grass-Roots Strength

Not all calls for help, by any means, come from the chapters and branches to the national AGC. When the association wants something done right and done quickly on a national scale, AGC officers and staff turn to the chapters to get the needed results. The chapters, on the whole, deliver the goods on time.

Relationship between the autonomous chapters and their national body is reciprocal and mutually beneficial. The national body and the individual chapters and branches draw strength from each other. If the ties were not mutually rewarding, the united front would soon dissolve.

Since the first president, Dan Garber, men of his type have made a sound and fruitful organization out of AGC. Through its 40 years, the association has had only five staff heads, each of whom contributed heavily to the steady progress of AGC. Brig. Gen. R. C. Marshall, Jr., was the first. He served from 1920 to 1929, when Daniel A. "Daddy" Garber took over for a brief span until his death in 1930. His assistant, Edward J. Harding, then headed the AGC staff until he died in 1940. Again, an assistant was on hand to take charge: H. E. Foreman carried on the association's work as managing director until 1956, when ill health compelled him to retire from active duties and become AGC adviser, his present position.

AGC Carries the Ball for Contractor Respectability

As AGC dedicated its new building (and rededicated itself) this week in Washington, D. C., it had a long history to recall. And Vice President Nixon's presence, as dedication speaker, recalled that President Woodrow Wilson was the father—at least the foster-father—of AGC.

During World War I, President Wilson and his lieutenants—military and civilian—had more than their share of troubles in placing and pushing prime contracts for construction of facilities to transform a peaceful nation speedily into a war-waging machine. One of the chief lacks was liaison: General contractors had no single voice to speak for them on the testy problems that broke every day over the heads of frustrated federal officers in Washington. President Wilson suggested that contractors get together so the government could learn what would work and what wouldn't in the way of unavoidable contractual relations between owner and builder.

Men like Daniel A. Garber and his cohorts nurtured the new organization and made it grow. And it wasn't easy. For general contractors of the day lived in shells of self-imposed reticence.

U. S. cartoonists portrayed the contractor as a paunchy cigar smoker in a plug hat carrying a heavy sack marked by a large dollar sign and the single word BOODLE.

It was partly to correct this public misconception that 97 general contractors, in response to a letter from Dan Garber, joined hands in 1918 to form a national organization. The founders determined to build an association of selected members having those characteristics of skill, integrity and responsibility that were later symbolized in the AGC seal you see displayed today on nearly every major job being built by a U. S. contractor.

The public and cartoonists were not entirely wrong in their low opinion of contractors in the early 1900s. Often there was truth in the appraisal. But it was a different breed of men who founded AGC.

Some were already members of local or regional associations, like the Northwestern Association of General Contractors and the Texas Association. They were well-established contractors who had built and were building giant jobs for the railroads and other expanding industries. They knew how to make a dollar, but preferred to make it honestly.

Levittown III: Schools Are on the Builder

Levitt challenges builders to solve school problems—he'll include them tax-free in N. J. development

Dynamic William J. Levitt, one of the nation's master homebuilders, has plunged headlong into construction of a new and different Levittown—a New Jersey project he calls "the most important job we ever tackled."

Perhaps the key feature of Levittown, N. J., will be its schools—the builder will construct them right along with the homes and hand them over to the community, free of charge and with no bond of indebtedness hanging over them.

Builder Levitt, never one to undersell an idea or a project, leaned back at a Washington news conference last week—where he formally announced his New Jersey plans—and tossed a school-building challenge to his fellow homebuilders:

"I think they're all going to have to come to this, or else housing is going to be stunted. You simply can't have houses without schools. This is one of our great problems in this country today."

Mr. Levitt says the first 1,000 homes will be built "regardless of sales between now and next February 28."

• Levitttown III—The new community is taking shape now on 4,000 acres, all inside Willingboro Township, a largely undeveloped piece of land nestling comfortably inside one of the Eastern Seaboard's great markets. Willingboro is a 25 minute drive from the center of Philadelphia and is situated about halfway between Camden and Trenton.

Levitt & Sons, in obtaining 4,000 acres, purchased about 90% of the township.

On the site, within the next few years (with no specific timetable for completion), Bill Levitt plans to build 15,000 houses, in three models priced from $11,500 to $14,000.

"Dollarwise, we're trending upward," he says. "These prices start at somewhat higher figures than either of the prior two Levittowns. But the houses are bigger and better, and on a cost per square foot basis we're down. The biggest house—eight rooms, 2½ baths, more than 1,700 sq ft inside—sells for about $8.20 per sq ft."

The new Levittown's ultimate 15,000 homes will make it smaller than the other two that the firm has built since World War II—17,477 in the first on New York's Long Island; 17,311 in the second, in Pennsylvania, just north of Philadelphia. Taking advantage of the topography, Levittown, N. J., will be a group of 10 communities—called residential parks. Each will be built around its own school, swimming pool and recreation area. The first, Somerset Park, will be ready for its first families by October.

In Pennsylvania, Levittown straddles parts of four different municipalities. "Trying to operate with four separate town boards and four separate school boards," the builder observes, "was like trying to work a jigsaw puzzle with tied hands." Confining the new Levittown to one township, he says, makes possible the tidier concept of future planning—including what one wag calls "throwing in a schoolhouse with every home."

There are other innovations, too. Tired of hearing homebuilders accused of foisting uniformity upon the consumer, Levitt will build all the different houses of different size, price and contour "right next to each other in the same section. We think it's going to make a good looking neighborhood."

• The school plan—Somerset Park's 20 room school will be ready, for elementary students, when the first houses are ready for occupancy in the fall. (The township has no high school; while Levitt & Sons decides what to do, Levittown high schoolers will go to class in an adjoining township.)

The Somerset Park school—which Builder Levitt calls "a knockout!"—features an air-conditioned auditorium that will be put to year-round use for a community meeting center. Classrooms are grouped not along a corridor, but around special use areas and a series of interior courts open to the sky.

Levitt people designed the school in consultation with officials of The Fund for the Advancement of Education, architects specializing in school construction, and educators. The Somerset school—prototype for others that will follow—is one story, of steel construction with a brick and glass exterior and marble chip panels.

• Levitt-at-large—Levitt & Sons, now 29 years old, has built some 55,000 homes with a total worth pushing upwards toward a billion dollars. Levittowns I and II alone—with a current population of 140,000—have a construction value of around a half-billion.

In the course of his Washington excursion last week, Builder Levitt spoke out on a number of other topics besides his current pride-and-joy:

- He sees no substantial business improvement for the rest of the year; the "buy now" advice being handed out to consumers is "complete nonsense—don't buy unless prices soften." On why he's building in the face of this situation, Mr. Levitt says, "we're trying to seduce the consumer with the best bargains he ever saw."
- There will be fewer than 1 million private housing starts this year.
- "Never again in my lifetime will things be as good as now for home buyers" with low down payments and easy credit, but government might do two more things to help: (1) Increase the FHA mortgage term to 40 years, instead of 30; (2) give up its monthly mortgage insurance fee of 0.5% taking instead only a one-shot charge of 0.5% of the principle sum of the mortgage at the outset.
- His plans for developing the 1.75 million Bel Air, Md., estate of the late William Woodward, Jr., are still in the early stages, but "it will not be another Levittown; it's not big enough (2,200 acres) to be a Levittown."

Low Bidder Gets Contract For Pipe After Argument

The St. Paul city council recently upheld public works competitive bidding procedures, in connection with an 8 mile water line, following a spirited argument that lasted for three months.

Ashbach Construction Co. was low bidder at $2,579,570 on steel pipe for the 60 in. dia line to run from the Mississippi River. Right behind at $2,596,831 on concrete pipe was Lametti & Sons, St. Paul.

The chairman of the city water board wanted to reject the bids and readvertice when Lametti gave a written promise to cut his price.

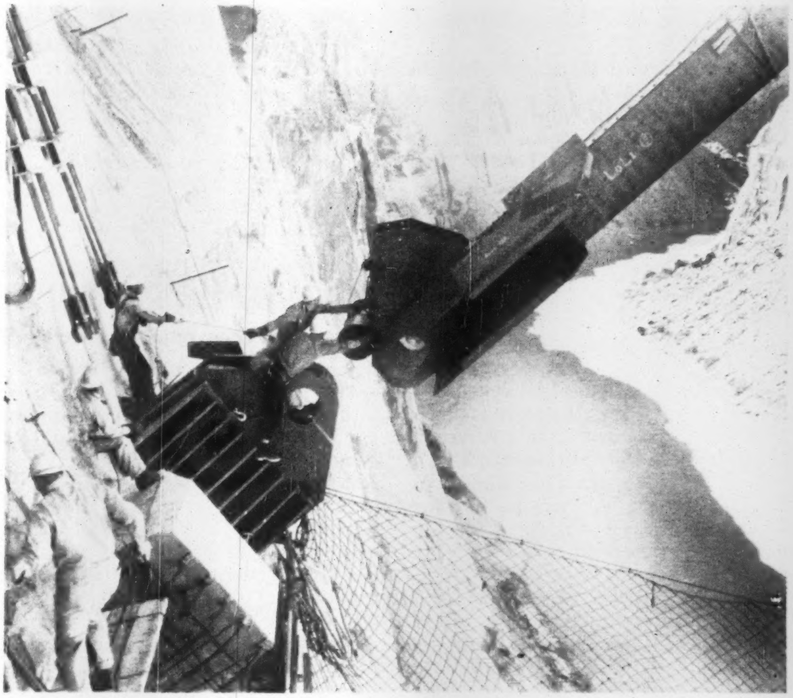
The water commissioner, who is a voting member of the seven man city council, contended that concrete would be superior to steel.

However, the general manager of the water department, L. N. Thompson, and the consulting engineer on the job, Black & Veatch of Kansas City, Mo., testified that either type of pipe would be satisfactory.

Members of the city council objecting to readvertising. Some of the comments: "If we readvertise three or four times we soon won't have any bidders" and "If we start fooling around with the bidding procedure we may just as well have public auctions."

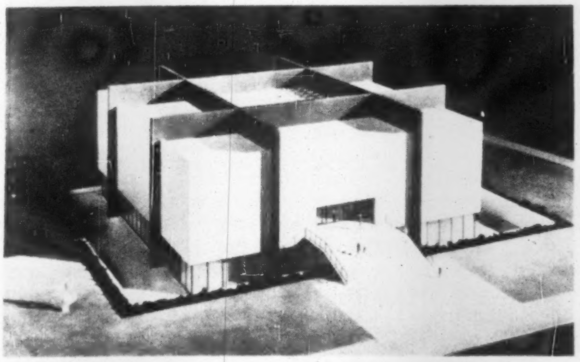
In the end, the council voted 5-2 to award the job to Ashbach, the low bidder.

Engineering News-Pictures



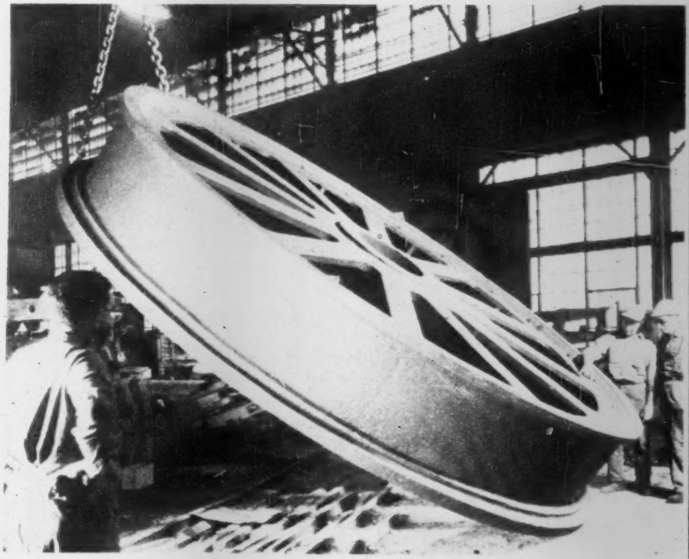
First Structural Steel For Spectacular Arch

Lower chord member for a spectacular arch bridge across the 700-ft-deep Colorado River gorge at Glen Canyon Dam is attached to skewback by ironworkers. Span between skewbacks is 1,028 ft—second longest steel arch in the U. S. Upon completion late this year, access to the U. S. Bureau of Reclamation project will be simpler. At present there is no way of getting a vehicle across the canyon except by cableway. Kiewit-Judson Pacific Murphy is contractor on the $4.1 million bridge



Museum Will Hang From Frames

Excavation has started for the $2 million Munson-Williams-Proctor Museum in Utica, N. Y. The 117 ft square reinforced concrete building will hang from four girders supported by eight exterior columns. These columns will carry the exterior walls which in turn will support the main exhibition level and balcony. The air conditioned structure also will have office and storage space, plus a 300 seat auditorium. Philip Johnson of New York City and Bice & Baird of Utica are the architects. George A. Fuller Co. is the general contractor.



Big Wheel for Big Lift

This 16 ft dia steel casting eventually will play a big role in the operation of the world's longest vertical lift span—a railroad structure now being built across the Arthur Kill between Elizabeth, N. J., and Staten Island, N. Y. (ENR Sept. 5, 1957, p. 36). Cast at the Coraopolis, Pa., foundry of the Blaw-Knox Co., the 30 ton wheel is one of eight units that will be machined to make sheaves for the 1½ in. cable that will raise and lower the 558 ft 2,000 ton span.

Uniform Road Practices Wanted

Highway progress, minimum design standards are discussed at western road meeting—BPR is criticized

A plea for greater uniformity of highway practices and dissatisfaction with Bureau of Public Roads administrative procedures were highlights of the 37th annual conference of the Western Association of State Highway Officials held last week in Salt Lake City.

The need for uniformity in highway practice from state to state was urged on the group by A. E. Johnson, executive secretary of the American Association of State Highway Officials. Unless such uniformity is voluntarily adopted, Mr. Johnson warned that it might be imposed by the federal government—perhaps even in the form of hard-to-change legislation.

According to Mr. Johnson the current, accelerated highway program has focused official and public attention on the possibility that non-uniformity existing among highway departments might be contrary to the public interest. The traveling public will be particularly aware of things that can be seen from the vehicle, like signs, markings, speed regulations, shoulder widths and the component parts of interchanges. Public officials will be concerned with the non-uniformity in structural design and variations in pavement thickness for similar soil and weather conditions.

• **Combine best features**—Speaker Johnson called on the highway departments to develop and agree on procedures and methods that would put the best of all of the states into a recommended practice. He warned, however, against uniformity that leads to development of handbook engineers, or that will stifle creative initiative.

Federal Highway Administrator Bertram D. Tallamy also touched on the matter of uniformity. He cited the AASHO interstate standards and warned it is foolish to go below these minimums. In fact, Mr. Tallamy said, the states are expected to design above these standards commensurate with special problems, maximum safety, maximum utility and continued efficiency.

He said that with almost $3 billion already obligated for interstate roads the Federal Highway Program is on schedule. He also said the rate of progress will continue to increase until the achievement of the 13-year schedule for completion of the program will be merely a matter of "keeping pace."

• **BPR is scored**—But it apparently has not been easy to reach the present rate of construction. And the attitude of many at the meeting suggested that one of the great deterrents to rapid progress lies in the administrative procedures of the Bureau of Public Roads.

This was brought into sharp focus in a talk by Leonard I. Lindas, chief counsel for the Oregon State Highway Department. His discussion was specifically aimed at state-BPR relationships in right-of-way acquisition. He severely critized the review practices of the BPR, and cited several instances of delay that result. Mr. Lindas also charged that other BPR review practices tend to slow the program.

Outgoing WASHO President, William E. Willey, state highway engineer of Arizona, discussed some other problems raised by the interstate program. Among these are uncertainties resulting from inadequate provisions for the trust fund. Another is the need for reanalysis of the over-all picture since the total cost has gone from $27 billion to $37 billion and may reach $40 billion.

Mr. Willey said that it is now realized that the first year build-up was too speedy. Plans were produced faster than many states could finance them and place work under contract. The danger of too much long-range planning, according to speaker Willey, is that some unforeseen event could knock the whole thing out of kilter.

An important resolution passed by the group pertained to a proposed defense highway system for Hawaii. The resolution pointed out that Hawaii is paying taxes toward the interstate program but is not participating in it. The resolution urged consideration of a separate program for Hawaii that would add to its national defense capability.

New president of WASHO is W. C. "Dutch" Williams, state highway engineer of Oregon. Vice president is Homer Oxley, chairman of the Wyoming Highway Commission. Thurman D. Sherard was re-elected secretary-treasurer. The 1959 meeting of WASHO will be held in Montana.

Fish May Get Boat Trip Past Columbia River Dam

An eight hour trip by barge is in store for migratory fish on the Columbia River if federal and state fishery agencies accept a proposal by the Grant County Public Utility District to move fish upstream past soon-to-be-started Wanapum Dam in Washington. The fish would be collected in water-filled barges anchored at the top of the Priest Rapids Dam fish ladders. The barges would be towed upstream to Wanapum Dam, lifted over it and continue upstream. Fish would be released at a point where current is strong enough to give a sense of direction (some fish on leaving fish ladders are swept back over the spillway).

Barge transportation is suitable in this case since the distance is short, only 18 miles between dams, and there are no tributaries between Priest Rapids and Wanapum.

The Grant County PUD believes the barge method to be better than fish ladders since the former will save bruising the fish on the way up the ladders.

Niagara Bid Scramble

Two contracts awarded, one after rebidding

Two more large construction contracts were awarded last week on the Niagara Power Project by the Power Authority of the State of New York.

A joint venture of Gull Construction Co. and L. G. DeFelice & Son, Flushing, N. Y., won the award for the third section of covered conduit on a low bid of $29.9 million made May 20. Contract for the second section covered conduit went to a joint venture of Edward Balf Co., Savin Construction Co. and D. W. Winkelman Co., of Hartford, Conn., on a low bid of $37.4 million.

The Balf-Savin-Winkelman contract was the one that aroused heavy interest. When bids on the work were first opened May 13, the eventual winning joint venture was low at $32.4 million, $10.1 million under the second low bidder. Subsequently, PASNY rejected all bids, saying the Balf group made an error in computation and that bidding documents contained an error.

The authority did not elaborate further. It was learned that the bid sheets called for "cu ft" of backfill rather than the obvious cu yd. Speculation in heavy construction circles on why PASNY rejected bids ranged from the view that the authority stood to lose a lot of money on the "cu ft" item to one holding that PASNY took the contractor off the hook to protect itself.

In the rebidding on June 3, B-S-W was again low, at $37.4 million. Second low bid this time was $39.7 million. The rest of the bidders also reduced their estimates in the rebidding. The high was $42.7 million compared to $50.8 million on the first call.

Major bid items on the Balf-Savin-Winkelman section were: 5.1 million cu yd unclassified excavation (mostly rock), 610,000 cu yd of concrete and 34,250 tons of reinforcing steel.

Corresponding quantities on the Gull-Defelice job were: 4.6 million cu yd, 446,000 cu yd and 22,500 tons.

NEW NEW NEW

Convertible

½ yd. HYDROHOE-HYDROSHOVEL-HYDROCRANE

NEW all-hydraulic H-5 Hydrohoe-Hydroshovel combines high production with traditional Hydrocrane mobility, flexibility

You asked for it — here it is! Real production digging, yards and yards of it, fast . . . a total of 90 hydraulic horsepower at your command. Dipper reversed, it's a powerful swing loader and it's convertible to crane, clamshell, auger, etc. It's the all-new H-5 Hydrohoe-Hydroshovel!

NEW DIFFERENTIAL VALVE LETS YOU SELECT SPEED OR FORCE

Optional *speed* and *force* ranges are available in the digging cycle. That means you can cut through easy digging with maximum speed — or use the optional, higher-range force action (with slower speed) to dig through frozen ground, tough clay, coral, etc.

NEW PUSH-BUTTON SELECTOR VALVES STEER POWER WHERE IT'S NEEDED

Selector valve buttons on the control levers let you concentrate horsepower where you need it when you want it. Operator can double the speed of any motion at the touch of a button.

NEW COMBINATION OF RAM FORCES EXCEEDS 90 TONS

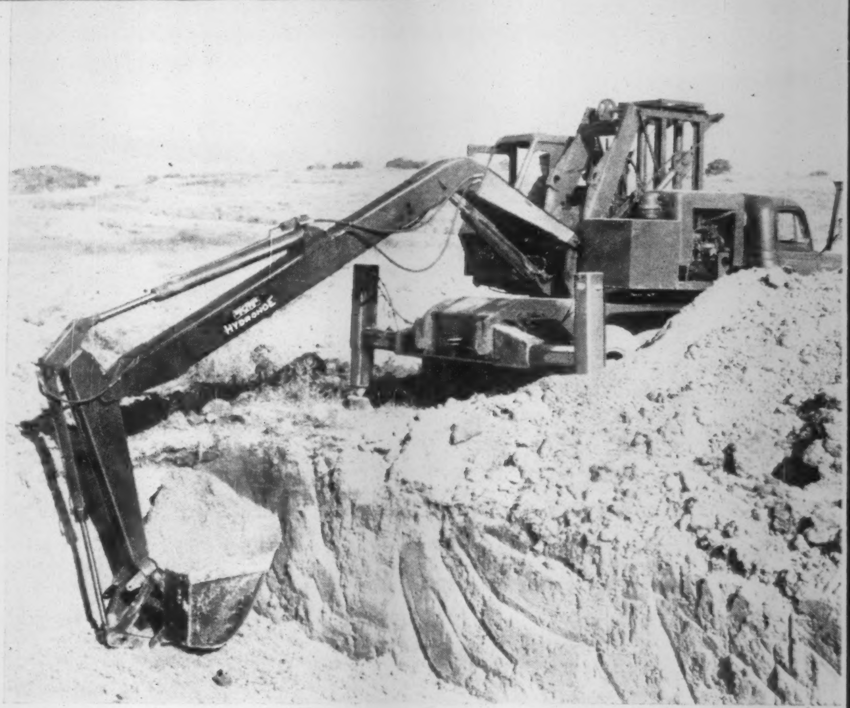
189,000 pounds of ram force combined in crowd-down, dig, and wrist actions. Combination of wrist action and telescoping boom provides more favorable dumping ranges (and cleaner dumps) both in tight and at maximum reaches.

PLUS ALL THESE FEATURES

Specialized boom telescope action — four hydraulic outriggers — low-cost carrier — up to 50 mph on open roads — all-hydraulic controls — short tail swing — four sizes of dippers.

See your Bucyrus-Erie distributor or send coupon for full details about the new ½-yd. H-5 Hydrohoe-Hydroshovel — tops for high-speed digging . . . big production digging . . . tricky digging.

234H58C



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SOUTH MILWAUKEE, WISCONSIN

Gentlemen:

Please send me complete details on the new H-5 Hydrohoe.

Name ____________________

Company ____________________

Address ____________________

City __________ State __________

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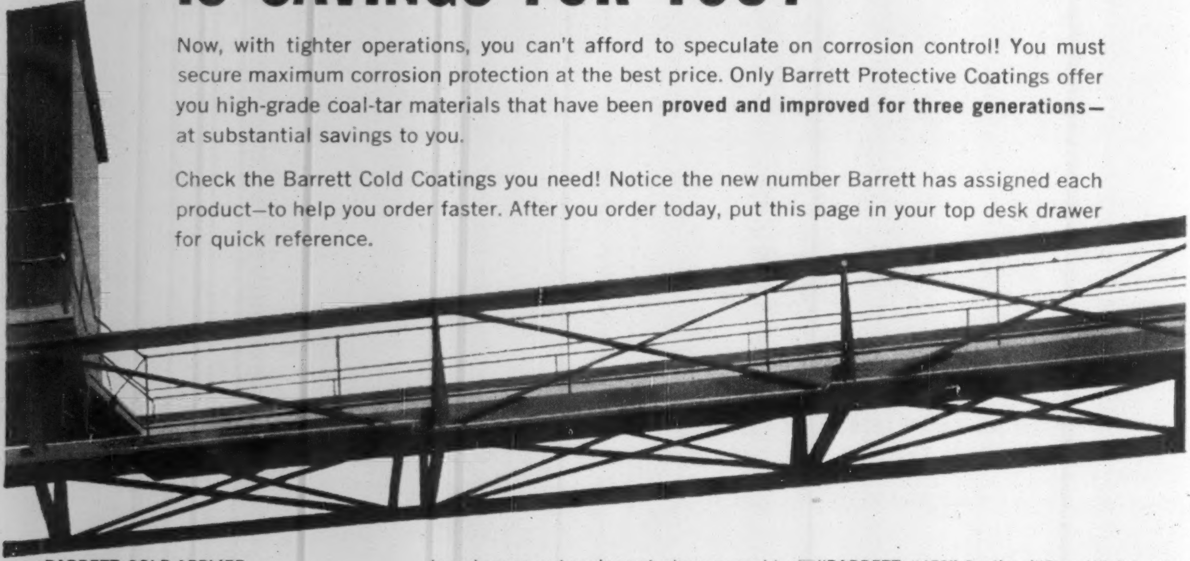
Compare fine Barrett Cold-Applied Coatings to others!

THE DIFFERENCE WITH BARRETT IS SAVINGS FOR YOU!

Now, with tighter operations, you can't afford to speculate on corrosion control! You must secure maximum corrosion protection at the best price. Only Barrett Protective Coatings offer you high-grade coal-tar materials that have been **proved and improved for three generations**—at substantial savings to you.

Check the Barrett Cold Coatings you need! Notice the new number Barrett has assigned each product—to help you order faster. After you order today, put this page in your top desk drawer for quick reference.



BARRETT COLD-APPLIED PROTECTIVE COATINGS
Fine grade coal-tar coatings applied by brush or spray without heating or activators. Properties include chemical resistance, heavy coating thickness per coat, and fast drying. For industrial uses on pipes, valves and connections; fences, grates and other open metal work; interiors of potable water tanks, cranes, conveyors, and handling equipment; and other corrosive areas.

☐ **"BARRETT #112" Coating** ("Barrett" Eternium® Paint) Coal-Tar Paint for all exposed metal work. Resists dilute nitric, sulfuric and hydrochloric acids, sulfur fumes and alkali. Use in presence of hydrogen sulfide—on pipelines, trestles, machinery, tanks, masonry and wood. In laundries, bleacheries, chemical, dye and steel plants, mines, bridges, etc. Brush or spray on. Two coats last five years under normal conditions. Covers 400 square feet per gallon per coat. Meets Military Specification MIL-P-6883.

☐ **"BARRETT #114" Solution** (T.O.F. Solution)—Coal-tar material suitable for inside of potable water tanks and pipes, hydrants and hose houses and equipment where no residual taste or odor can be tolerated. Meets AWWA Specification D102-55T, Sec. 5.4.6. for "Cold-Applied T & O Tar Base Paint."

☐ **"BARRETT #120" Coating** ("Barrett" Industrial Coating)—Industrial coating—special purpose, reinforced, heavy-duty coal-tar pitch coating for severe corrosive conditions. Brush or spray it on metal, concrete and stone masonry. Reinforced with inert minerals. Equivalent to about three coats of ordinary paint. Withstands wet heat of 185° F. and dry heat of 400° F.

☐ **"BARRETT #134" Coating** ("Barrett" 34Yb Cold Coating)—A plasticized thixotropic, coal-tar material that meets requirements of the U. S. Navy, Bureau of Yards and Docks Specification No. 34Yc. Use it on exposed metal work where corrosion is severe due to salt spray and other reactive conditions—piers, ships, floating drydocks, service vessels and for off-shore oil and gas wells. Use also for nuclear installations. Approved by Underwriters' Laboratories, Inc. for use on septic tanks—bituminous coated, System II.

☐ **"BARRETT #150" Coating** ("Barrett" C.A. 50 Cold Coating)—A plasticized, gel-type, coal-tar material that meets U. S. Bureau of Reclamation Specification No. C.A. 50. Apply it at atmospheric temperatures, wherever extra-heavy and durable protection is required. Protects concrete work, dams, penstocks and bridge piers. Also, exposed trestle work, exposed concrete or metal work subject to extreme corrosion. Used when an engineer desires to achieve maximum thickness with minimum number of coats.

☐ **"BARRETT #160" Service Coat** ("Barrett" Service Cement)—Service mastic with high-grade, coal-tar pitch base, plastic material. Apply it cold to field joints of welded pipe. You don't have to prime or torch surface. Use it with Barrett Pipeline Fabric. Inert, waterproof, non-corrosive to steel surfaces. Not affected by soil acids and alkalis. Meets Specification SSC-153, Type II.

Order the Barrett Cold Coating that you need to combat corrosion! You can't afford to speculate on protection—buy Barrett and save!

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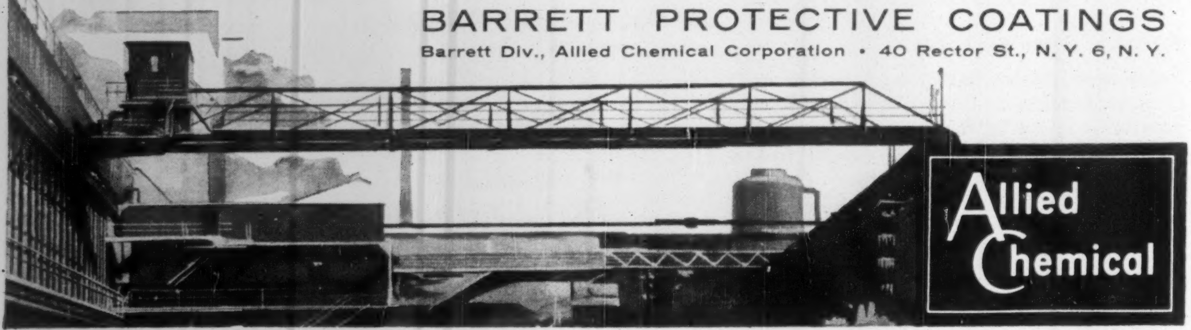


Waste Treater Puts on Show

American Cyanamid holds seminar to open new plant to handle the "waste that couldn't be treated"

"This seminar today, arranged as it is by one of our large American industries, provides evidence that industry has an awareness of the effects upon health of pollution of the air we breathe and the water we use."

That's how Daniel Bergsma, New Jersey Commissioner of Health, keynoted a high level water and air pollution seminar in Bound Brook, N. J., last week called by the American Cyanamid Co. (at the same time neatly summing up its significance—see page 152).

Swelling with pride over completion of a plant to handle a "waste that couldn't be treated" (ENR Oct. 3, 1957, p. 25), the company invited some of the big names in the pollution control field to speak, and 200 or so persons to listen, to mark the waste plant's opening.

Speakers included Gordon E. McCallum, chief of the U. S. Public Health Service's water pollution control program; Robert S. Shaw, New Jersey's state sanitary engineer, Charles E. Renn and H. Heukelekian, noted Johns Hopkins University and Rutgers University professors of sanitary engineering; W. Brewster Snow, chairman of the Rutgers University department of civil engineering; Vernon MacKenzie and Miriam Sachs, leading figures in air pollution control; and Cyanamid's James C. Lamb, who was in charge of the $1 million development program that preceded construction of the $4.5 million plant at Bound Brook.

The most unusual feature of the activated sludge facility is the exceedingly lengthy aeration time—24 hours—it requires to treat a complex chemical waste (from 800 process lines) containing much material inhibitory to biological oxidation. As late as 1949, many authorities said the waste couldn't be treated by biological methods.

The one-day seminar, on June 4, was followed the next day by actual dedication of the treatment plant. There, numerous tributes were given American Cyanamid for another of the plant's significant aspects. It will accept for secondary treatment the effluent from a primary plant now under construction for three neighboring municipalities.

The three towns, operating through the Somerset-Raritan Valley Sewerage Authority, figure to save about $38,000 a year in operating expenses on 3-mgd of sewage. Cyanamid's plant is designed for 20 mgd (though it is of a size usually associated with a 120 mgd plant due to the large aeration tank volume).

Water Well Runs Wild

Broken casing of artesian defies plugging — so far

The city of Onida, S. D., is having its troubles trying to control a 3-year-old artesian well that has been flowing uncontrolled for about two years.

Because of a broken casing, water from the 2,200-ft-deep well comes to the surface in a deep pool about 50 ft away and floods an area alongside a federal highway. Fear that the pavement will be disrupted has caused South Dakota and the city to spend large sums in unsuccessful efforts to plug the well.

Recently, 12 truckloads of sawdust were pumped into the well to feel out underground conditions and possibly stop the flow. When this failed, a 1,400 ft hole was drilled beside the well and a charge of 22 quarts of nitroglycerin exploded to burst the casing of the artesian. Cement then was to be pumped into the well through the hole. However, the blast failed to rupture the casing and the water flows on.

Unfortunately, the water cannot be used and the one 90 gpm well the city has in operation does not meet summer demands when lawn sprinkling and other conservation measures are enforced. The artesian well originally produced 500,000 gpd. But there's no way now of estimating the flow.

Court Rules Unused Plans Don't Earn the Full Fee

An architect who sued for $267,000 for work done in 1947 on plans for a new county courthouse that was never built lost his case last week in a Louisville court.

The lawsuit was based on a contract by which architect Stratton O. Hammon, who did the architectural work on the proposed courthouse and architect Walter C. Wagner, who did the structural planning, would have received a fee of 6% of the $4.5 million building cost. The county, however, had the right to cancel the contract before the architects began detailed drawings; in that case the county was to pay a fee of $5,000 or less.

In 1948 the county called off the building plans, voided the contract, and paid $3,000 to the architects. Mr. Hammon claimed he had already started detailed plans before the contract was cancelled and presented fiscal court with a bill for $267,000.

The court denied detailed drawings had been started, but awarded an additional $2,000 so the architects would receive the maximum fee of $5,000 for preliminary plans. Architect Wagner had refused to join the suit.

Libbey-Owens-Ford Office For Downtown Toledo

Libbey-Owens-Ford Glass Co. will build a new office building in Toledo, Ohio. Scheduled to be under construction by early fall, the square, free-standing structure will be downtown Toledo's first major office building in 30 years. Skidmore, Owings & Merrill, New York City, is completing plans for the 14 story glass enclosed building, which will stand in an open plaza at Madison Ave. and Ontario St. George A. Fuller Co. is general contractor for the project.

Coming next week . . .

Roadbuilding Gets Rolling

The road program is really moving and it's big. But is it big enough? You'll learn the answer in a special report next week in ENR. And . . .

What about the federal-state program? Where does it stand now?

Five current studies will influence the new roads? What are they? Take the Illinois test road, for example. (It's actually 836 different roads). What's being tested? Why?

And who—or what—is Oscar?

You won't want to miss next week's big issue. It'll answer all these questions and more.

Plus, ENR's second quarterly cost roundup, featuring highway cost indexes and estimating guides.

(*Advertisement*)

NATION ENDORSES

ittsburgh Firm Announces New etal Discovery

PITTSBURGH (AP) — A. M. Byers o put on the market today a new ind of wrought iron described as he most significant development in he history of the metal.

This description was given at a ews conference yesterday by B. M. yers, president of the Pittsburgh irm. It is the world's largest maker f wrought iron products.

The improved product, known as -D wrought iron, is at least 25 per ent ... to corrosion han com . It ron rese bett pro T wr ox re pr w it s

Firm Producing Corrosion-Proof Wrought Iron

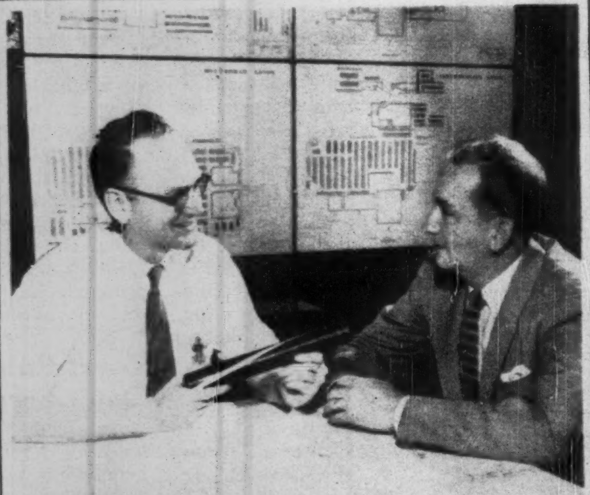
A new 4-D wrought iron has been announced by the A. M. Byers Co., Pittsburgh, according to E. G. Sullivan, field service engineer here for the firm.

Byers, largest producer of wrought iron, claims the ne iron has greatly superior resis ance against many kinds of co rosive forces, includi se i d so eam een in- ase ous us ca he ly h

New Wrought Iron Produced

A new "4-D wrought iron" with 25 per cent increased corrosion resistance has been brought out of the laboratory and into production by the A. M. Byers Co., William E. Weber of Seattle, Byers field service engineer, said Sunday.

Weber said 4-D wrought iron is immediately available



4-D PIPE — R. R. Kirkwood (left), Chief Mechanical Engineer for John Graham & Company, Seattle, checks piece of 4-D Wrought Iron Pipe now being produced by A. M. Byers Co. Looking on is Byers' Seattle Field Service Engineer, W. E. Weber.

A. M. Byers Claims Improved Wrought Iron Less Likely to Corrode

By a WALL STREET JOURNAL *Staff Reporter*

PITTSBURGH—A. M. Byers Co., a producer of wrought iron products, announced its metallurgists have come up with a new and improved version of standard wrought iron.

Called 4-D wrought iron, simply a marketing term used to distinguish it from the standard product, it is expected to "aid substantially" in reducing losses stemming from material failures caused by corrosion, B. M. Myers, president, stated.

He said that standard wrought iron is already "a bulwark in the fight against corrosion." Wrought iron pipe, for instance, is used in water, waste and drainage lines, locomotive and diesel engine piping and underground airplane fueling lines, while flat rolled products go into coal chutes, bridge decking, pier protection plates, structural members and process materials tanks.

A. S. Chalfant, vice president-sales, said the new product will go on the market immediately. He added that the new product will sell for the same prices as those for standard wrought iron.

. M. Byers Announces Results Of Tests On New 4-D Wrought Iron

PITTSBURGH, Mar. 18. — Results of three tests new 4-D wrought iron have been announced by the etallurgical department of A. M. Byers Company, ttsburgh. The test data documents the announcement made by A. S. Chalfant, vice president of sales, a press conference in ttsburgh in February at new 4-D wrought iron at least 25% more cor-

gion is characterized by agitation and plentiful oxygen."

Test Conditions

Byers Improves Its Wrought Iron

Special to World-Telegram and Sun.

PITTSBURGH, Feb. 13.—A. M. Byers Co., producers of wrought iron products, announced its metallurgists have found a new and improved version of standard wrought iron.

Called 4-D wrought iron, as a marketing term used to distinguish it from the standard product, it is expected to "aid substantially" in

Develop New Wrought Iron

PITTSBURGH, Feb. 13 . M. Byers Co., a produc rought iron products, ounced today its metallur ave come up with a new nproved version of stan rought iron.

Called 4-D wrought mply a marketing term o distinguish it from tandard product, it is expe o "aid substantially" in re ng losses stemming from

A. M. Byers Co Develops New Wrought Iron

Dow-Jones Service

PITTSBURGH, PA., Feb. 13 A. M. Byers Company, produ of wrought iron products, nounced its metallurgists ha come up with a new and proved version of stand wrought iron.

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A. S. Chalfant, vice presid sales, said the new product

Civil Engineer C. E. Drummond (left), examines 4-D Wrought Iron sponge ball with J. A. Cain, A. M. Byers Company southeastern division manager. Laboratory

Developed By Byers

New Wrought Iron 25 Per Cent More Corrosion Resistant

250,000 Non-Rusting Fibers Per Square Inch In Product

By W. L. RUSSELL, Press Business Editor

Out of the laboratory and into production at A Byers Co. has come a new type of wrought iron is credited with increasing corrosion resistanc much as 25 per cent.

The new 4-D is a result of 17 years of researc In addition to superior resistance to corrosior new iron has greater uniformity and improved physic

(Advertisement)

4-D WROUGHT IRON

M. Byers Co. Markets ew Kind of Wrought Iron

TTSBURGH (AP)—A. M. Byers
put on the market today a
kind of wrought iron de-
ped as the most significant
lopment in the history of the
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is description was given at a
conference yesterday by B.

wrought iron, developed after 17 years of research, has greater uniformity and better physical and mechanical properties.

The key to manufacture of 4-D wrought iron is removal of more oxygen from the base metal—

A. M. BYERS DEVELOP NEW WROUGHT IRO

PITTSBURGH, Feb. 13—(DJ
A. M. Byers, Co., a producer o
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of standard wrought iron.

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a marketing term used to dis-
tinguish it from the standard
product, it is expected to "aid
substantially" in reducing losses
stemming from material failures
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Corrosion Resistance Raised in Wrought Iron

PITTSBURGH, Feb. 15 (AP) The A. M. Byers Company has announced development of an improved type of wrought iron highly resistant to corrosion.

Known as 4-D wroug
the product is the re
seventeen years of re
the company said.

B. M. Byers, preside
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'New' Wrought Iron Developed

Production by A. M. Bye
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of a new "4-D wrought iro
with 25 per cent increase

A. M. BYERS DEVELOPS NEW WROUGHT IRON

A. M. Byers Co., a producer of wrought iron products, announced its metallurgists have come up with a new and improved version of standard wrought iron. Called 4-D wrought iron, simply
keting term

4-D Wrought Iron Cuts Corrosion

Out of the

B. Rykoskey, General Superintendent of Motive
wer, Baltimore & Ohio Railroad, gets a first hand
ort from R. G. Angell (left), A. M. Byers Co. Railroad
es Manager, on the increased corrosion resistance
new 4-D Wrought Iron. Byers recently announced a
ic improvement in wrought iron which makes the
duct at least 25% more corrosion resistant than
ndard wrought iron. Railroads are among the world's
gest users of corrosion resistant wrought iron.

Here is news. It's about one of the most significant metallurgical advances of modern times: the increased corrosion resistance of new 4-D Wrought Iron. This improved metal provides longer service life at lower cost per year. You can get further details from the Byers representative or by writing direct: A. M. Byers Company, Clark Building, Pittsburgh 22, Penna.

M. Byers Making New Wrought Iron

he most significant development
the history of wrought iron
allurgy — new 4-D wrought
— has just been announced
A. M. Byers Company.

a press conference Tuesday in
sburgh, B. M. Byers, president
the firm which is the world's
est producer of wrought iron
lucts, told newsmen:

condensates.

According to E. P. Best, Byers chief metallurgist, the improved 4-D wrought iron was achieved by substantially increasing the deoxidation of the base metal; increasing the phosphorous content in relation to the other material components; and using
fiberous material.

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A. S. Chalfan
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WROUGHT IRON IMPROVEMENT IS REPORTED

Out of the laboratory and into production has come "new 4-D Wrought Iron" with 25% increased corrosion resistance, A. D. Sheere, A. M. Byers Co. Pacific Coast manager, announces.

Mr. Sheere, of San Franc
recently returned from Pittsb
where he was given a previe
the new material. He says
Wrought Iron is immediately
able—at no increase in price—
will save millions of dolla
corrosion losses annually in
Pacific Coast territory.

According to Mr. Sheere,
4-D Wrought Iron was achiev
increasing the purity of the

New Wrought Iron Is 25 Per Cent More Corrosion Resistant

A new type of wrought iron, developed in the laboratories of A. N. Byers Co., Pittsburgh, is now in production. It is credited with increasing corrosion resistance as much as 25 per cent. The new metal, known as "4-D" is the result of 17 years

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Byers Improves Wrought Iron

Special to the Herald Tribune

PITTSBURGH, Feb. 12.—A. M. Byers Co. announced today that it had developed a new kind of wrought iron, shown by tests to offer "greatly superior resistance" to corrosion.

Called "4-D," the improved wrought iron was achieved by substantially increasing the de-

Vrought Iron More Resistant

A wrought iron whose corrosion re-
stance is increased 25% over standard
rought iron is available. Marketed
nder the name 4-D Wrought Iron,
e product is the result of 17 years
research, laboratory and in-service

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Byers Develops New Wrought Iro

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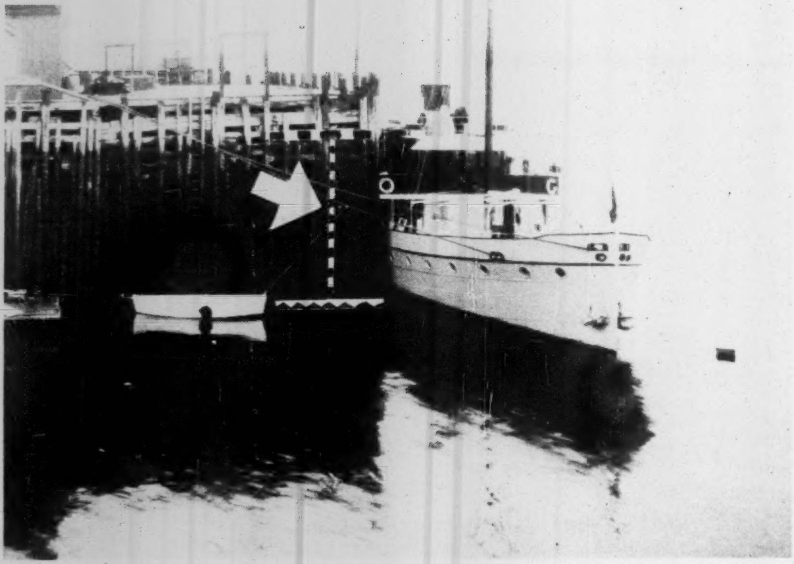
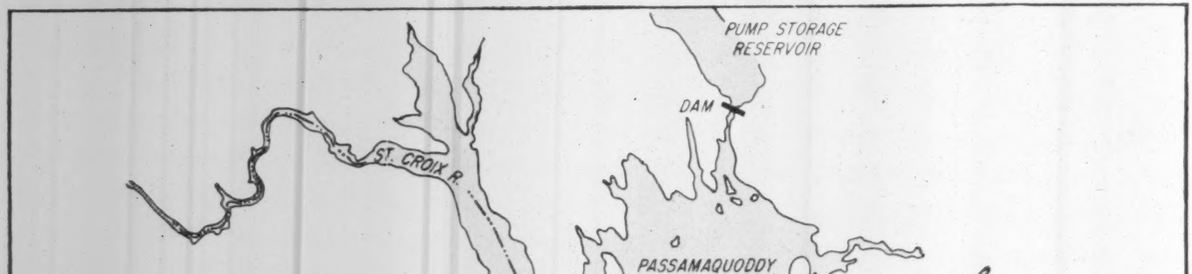


THE TASK . . .

To harness power from tides up to 26 ft *(arrow)* in the Bay of Fundy off Maine and Canada.

. . . THE PLAN

The Corps of Engineers has arrived at the best project arrangement shown below. However, final cost studies will not be complete at least 16 months.



PUMP STORAGE RESERVOIR
DAM
ST. CROIX R.
PASSAMAQUODDY BAY
Total length of barriers – 28,000'
Max. depth of barriers – 290'
All gates 30' x 30'
CANADA
U.S.
UPPER POOL
40 filling gates
MAINE
30 Unit Powerhouse @10,000 Kw
50 filling gates
70 emptying gates
BAY OF FUNDY
N
COBSCOOK BAY
LOWER POOL
0 2 4 6
Scale in Miles

Tidal Power Project Chosen

Richard D. Field
Chief, Passamaquoddy Survey Division
New England Division
Corps of Engineers

The $3 million Corps of Engineers investigation of the International Passamaquoddy Tidal Power Project has progressed to the determination of the best project arrangement. Tidal barrier locations and type, turbine and generator sizes, and required off-site firm up power have all been optimized. However, it will be another 16 to 24 months before cost estimates will be available for final determination of 'Quoddy's economic feasibility.

Over 60 different plans were analyzed before the development shown in the accompanying project map was determined to be the optimum arrangement. Studies considered the justifiable number of filling and emptying gates and number of power units as related to costs and power potential.

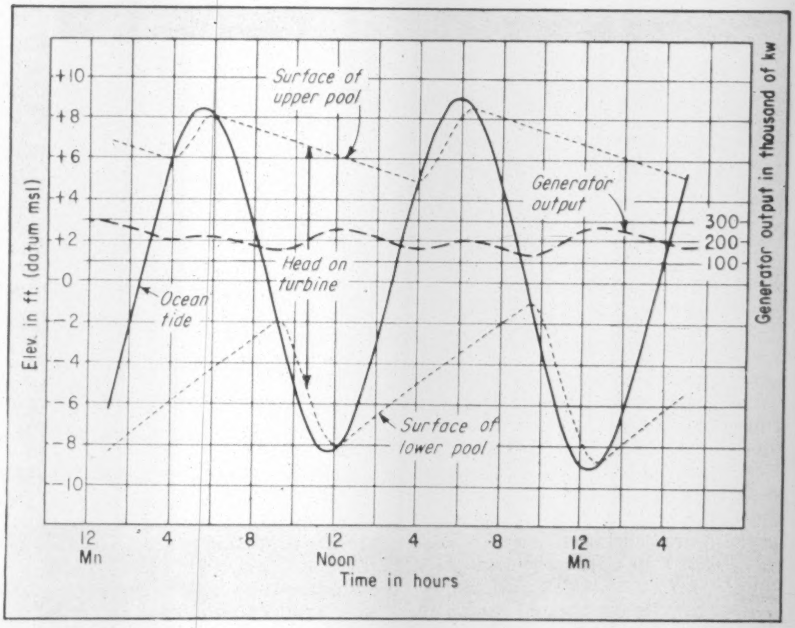
This best plan includes an upper pool of approximately 100 sq mi with 90 filling gates and a lower pool of approximately 38 sq mi with 70 emptying gates. The powerhouse would contain 30 generators rated at 10,000 kw, each driven by 320 in. turbines operating at 40 rpm.

All tidal barriers would be of rockfill construction with locks provided to maintain navigation. Cross sections for these dams have not yet been established, but the barriers would have a total length of about 28,000 ft and would cross passages as deep as 290 ft below mean sea level.

The proposed project is a two-pool development with one of the pools filled from the ocean at high tide and the other emptied to the ocean at low tide. Power is generated by passing water through turbines from the upper to the lower pool, the rate of generation depending on the prevailing instantaneous head. A typical cycle of operation during a tide of average range is illustrated. Tides at Passamaquoddy range from 12 to 26 ft, with an average of 18.2 ft.

• Giant computer used—Power calculations are a cut-and-try process involving determination of pool elevations and discharges from the turbines and gates if the latter are open. The repetitive nature of these operations pointed to use of an electronic computer as a time and money saver. The problem was programmed for an IBM 704 digital computer with the program allowing varying the pool areas, the number of filling and emptying gates, the number of turbines, and the characteristics of the turbines.

Elevations of the ocean at any time were determined by machine solution of the tidal equation, which consists of 21 cosine functions. Computations of power for one month by manual methods required about 15 man-days and by machine methods only 4 minutes.



TYPICAL CYCLE of two pool tidal plant operation. Output varies from 75,000 kw to 345,000 kw, necessitating an auxiliary hydro storage plant to meet higher firm loads.

Use of the electronic computer permitted accurate comparisons of power output from various project arrangements and determinations of optimum number of gates and generators. Comparison also was made between Kaplan and fixed-blade turbines. The study showed that the increased cost of Kaplans over fixed-blade turbines was not justified.

• How much power—Output of the project varies from 75,000 kw during a 12 ft tide to 345,000 kw during a 26 ft tide. Although the project will generate almost 2 billion kwh annually, its dependable capacity (kilowatt rate of output) is relatively low.

It is apparent that it will be necessary to operate Quoddy in conjunction with either a pumped storage plant or an auxiliary river hydro plant. An auxiliary river plant would furnish the additional capacity and energy necessary to permit base loading the tidal plant. The pumped storage plant would use energy from the tidal plant not deliverable to load and return it to the system when needed at any rate required.

An off-site reservoir with a pumped storage potential of 28 million kwh has been found necessary to equalize the project output over a one year period. With about 225,000 kw of pump-generation capability installed, the tidal project could meet a firm load of slightly more than 300,000 kw. The firm load figure assumes a 60% annual load

Nine designs of various types of filling and emptying gates were investigated before selecting a 30 x 30 ft vertical lift gate in a submerged venturi setting. Although the initial cost of a vertical lift gate in a crest setting would be somewhat less than that of the selected design, this was offset by reduced operation and maintenance costs. The chosen design also was considered to be less susceptible to icing and freezing conditions, and thus more reliable.

• Investigation steps—A review, made at the beginning of this investigation, of the data developed by the Corps in 1935-36 for the ill-fated all-American project (see accompany box) showed that this material generally was sufficient for the U.S. side of the international project. However, comparable data for the Canadian side were not available.

Aerial mapping of project areas in Canada has been completed under a contract with Aero Service Corp., Philadelphia; underwater foundation explorations of the various dam sites have been completed by Brown & Root Marine Operators, Inc., Houston, Tex. (ENR Sept. 12, 1957, p. 60); underwater mapping by sonic methods has been essentially completed by Fairchild Aerial factor.

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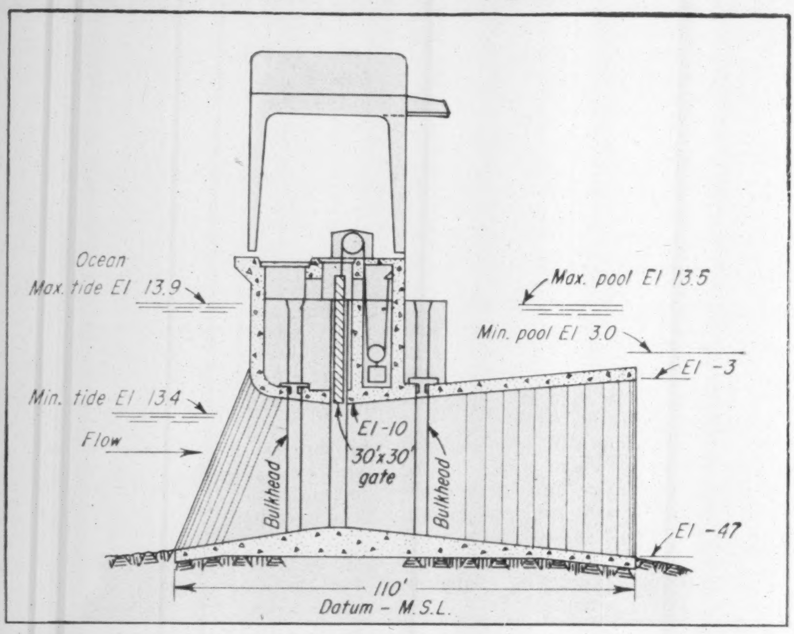


FILLING GATE would be 30 x 30 ft vertical lift type in submerged venturi setting.

Surveys, Inc., Los Angeles; and a land drilling program has just been completed for structure foundation explorations and for possible rock quarry sites. Land drilling work at the tidal project was contracted to Boyles Brothers Maritime, Ltd., Moncton, New Brunswick, and at the auxiliary power sites to Geocon, Ltd., Montreal, Quebec.

The present survey is being carried on under jurisdiction of the International Joint Commission. The engineering phase of the survey is the responsibility of the International Passamaquoddy Engineering Board, headed by Lt. Gen. Samuel D. Sturgis, Jr., USA (Ret.) and Gerald Millar, chairmen of the U.S. and Canadian sections, respectively. The New England Division of the Corps has been assigned to carry out the actual work, and the author is in charge of the special Passamaquoddy Survey Division set up under Brig. Gen. Alden K. Sibley, division engineer.

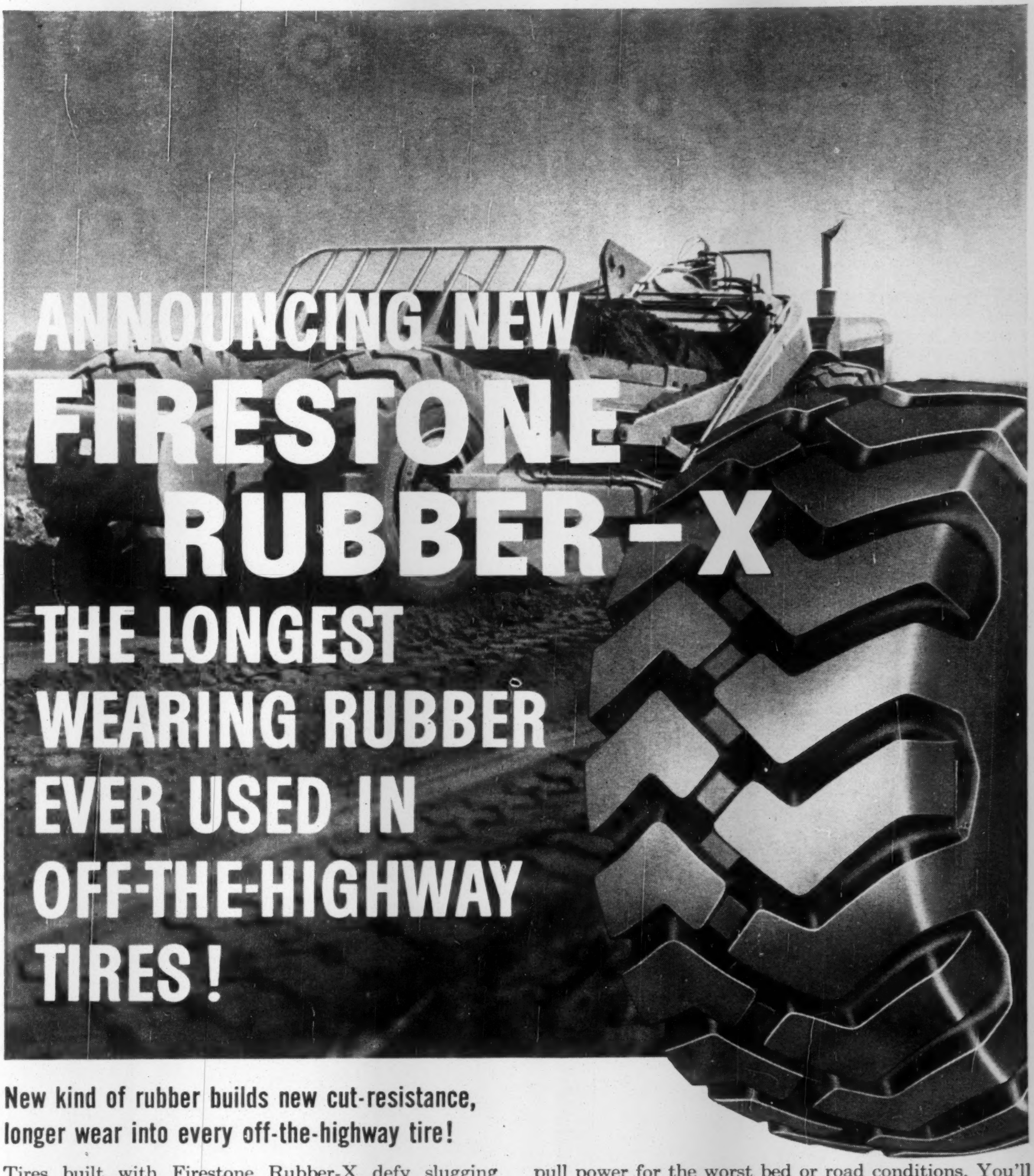
Quoddy's had its ups and downs

Development of power from the rise and fall of the tides in the Bay of Fundy was first conceived in the early 1920s by Dexter P. Cooper, a consulting engineer and summer visitor to the Passamaquoddy area. He proposed a two-pool development using Passamaquoddy Bay as a high level pool and Cobscook Bay as a low level pool.

In 1935 construction of an all-American one-pool project utilizing Cobscook Bay only was authorized as a work relief project. The Corps of Engineers was allotted $10 million to cover the first year's work. About $7 million of this money had been spent on construction and engineering investigations when activities were suspended due to failure of Congress to appropriate additional funds.

Since that time numerous studies and reports have been made on an international two-pool tidal power development. It was the conclusion of these reports that the development could be physically engineered, constructed and operated, but that available information was inadequate to permit determination of its economic feasibility.

Early in 1956, Congress authorized a sum not to exceed $3 million to make a comprehensive survey of the international project to determine if the project is economically feasible and the effects of construction and operation of the project on local and national economies and on the fisheries industry of the region. Annual costs would include interest on investment, amortization, depreciation, taxes foregone, and operating and maintenance expense. Annual benefits attributable to power would be considered as the annual cost of generating equivalent power by the cheapest alternate means, presumably by a steam-electric plant.



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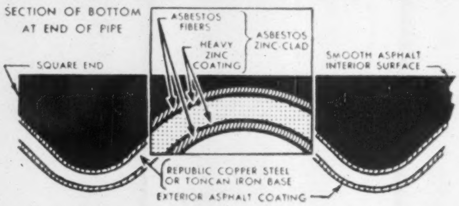
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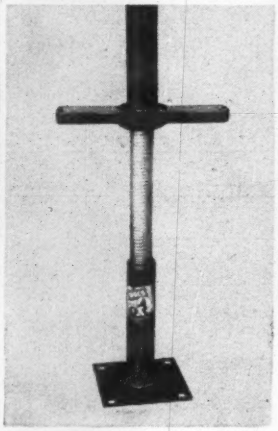

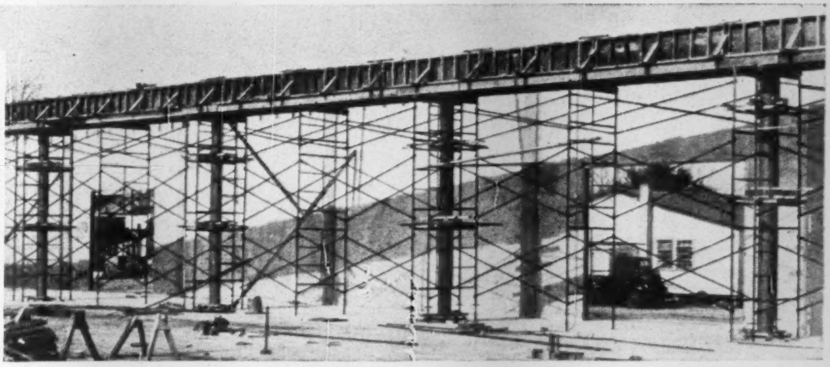

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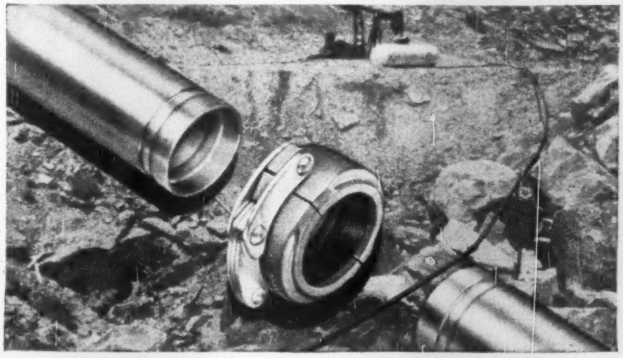

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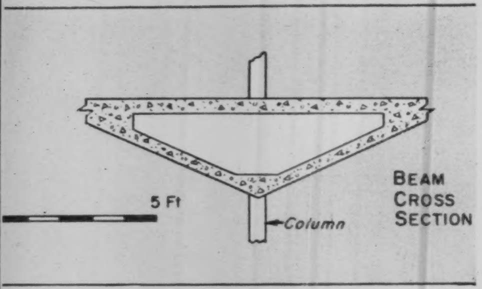
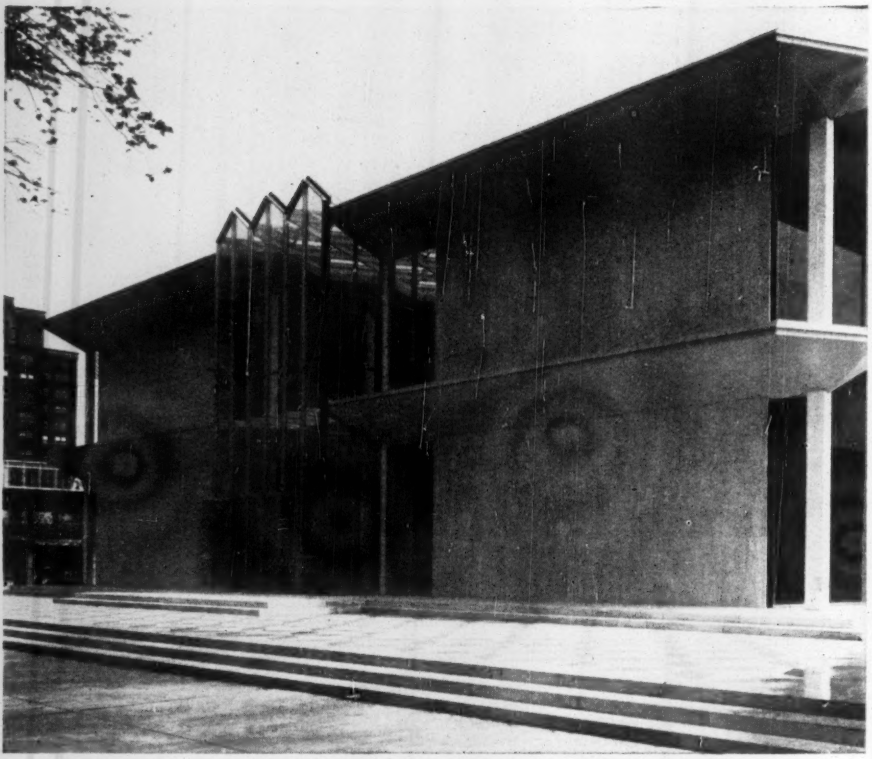
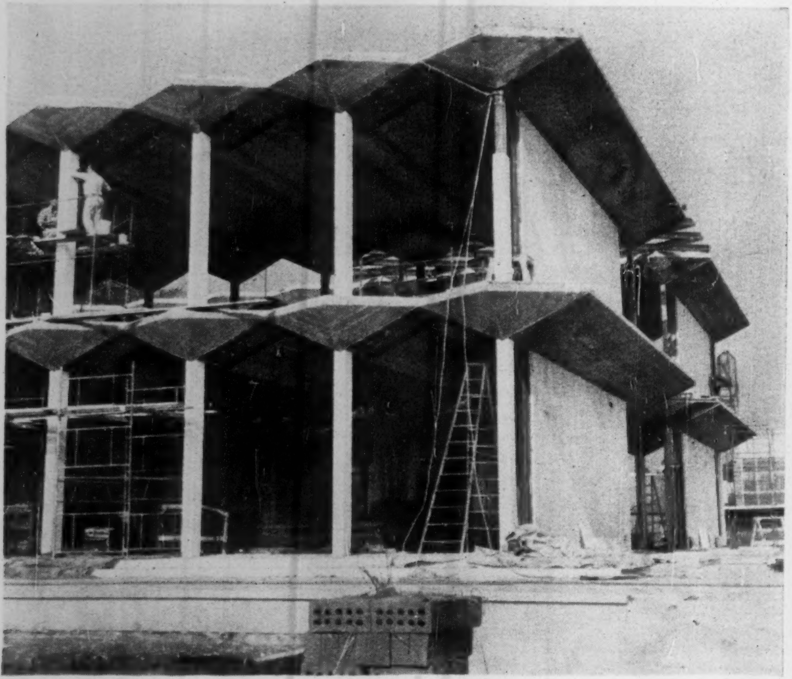


Big hollow triangular beams supply both brawn and beauty for a new community service building in Detroit. The reinforced concrete members carry the floor and roof loads and also set the esthetic tone of the building.

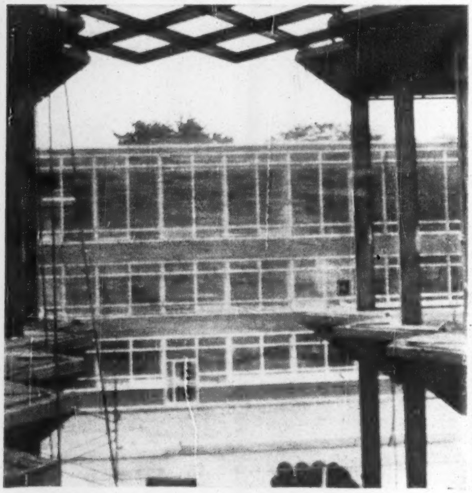


Floor and Roof Beams Glamorize Campus

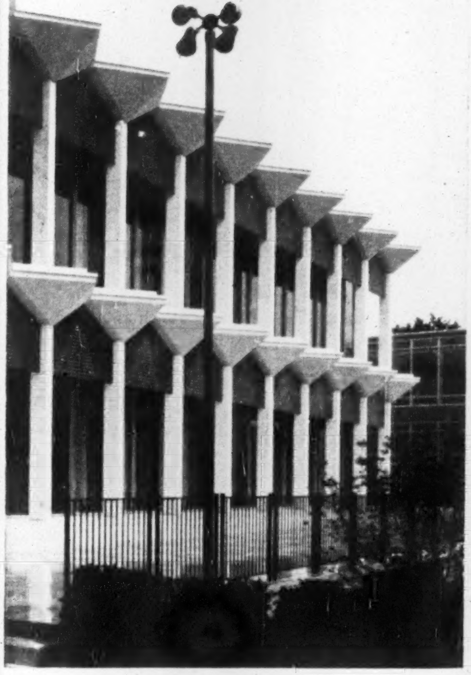


UNDERSIDES OF THE BEAMS form sawtooth ceilings, which were sprayed with concrete outside the wall line (visible a few feet behind the columns) and plastered inside.

The beginning and end of floor and roof-beam esthetics lie as often as not in just getting the members out of sight. But shake loose from everyday shapes, as architect Minoru Yamasaki did in designing a new community center at Wayne State University in



CORRIDOR OPENING divides both second floor and roof into equal halves.



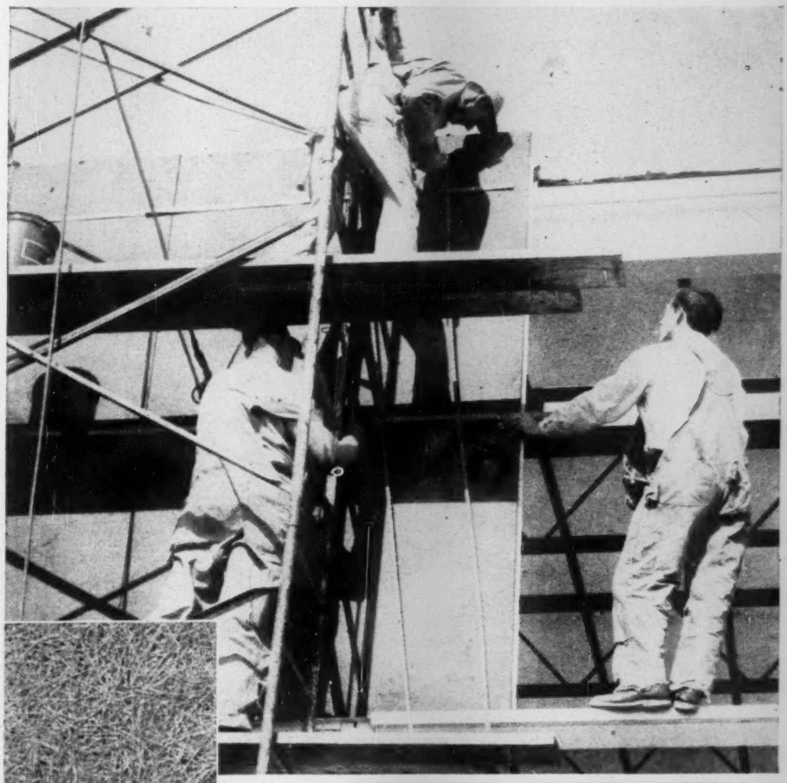
Building

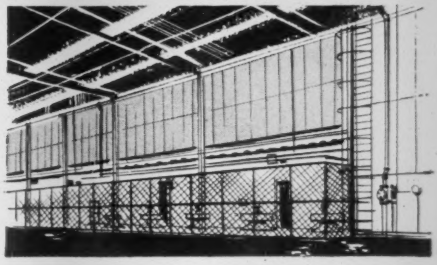
Detroit, and beams justifiably can dominate the appearance of a building.

The new Wayne structure sticks more or less to conventional concrete construction for the basement and first floor, but this is not so upstairs. The reinforced concrete second-floor and roof beams are broad, hollow, inverted triangles in cross section. Their 10 ft wide top sides serve as the deck in addition to functioning as beam parts. Their sloped undersides set the pattern for sawtooth ceilings. And their tapered ends, arrayed side by side, form serrated overhangs outside the exterior walls and above a central lobby.

• **Multipurpose facility**—The McGregor Fund, a philanthropy active mainly in the Detroit area, paid for the building. The structure bears the name McGregor Memorial Community Conference Center. Wayne State donated the site and owns and administers the center. Civic, cultural, educational, charitable and social groups have access to its facilities, which include 24,000 sq ft of floor area, largely conference and meeting rooms. The building holds about 600 persons, and its kitchen can feed 150.

(*Story continued on page* 44)





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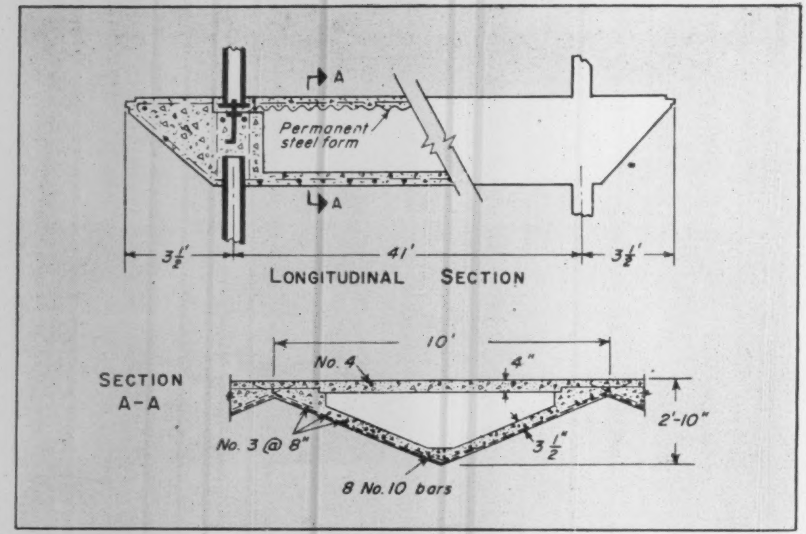
. . . Triangular shape makes beams unusual

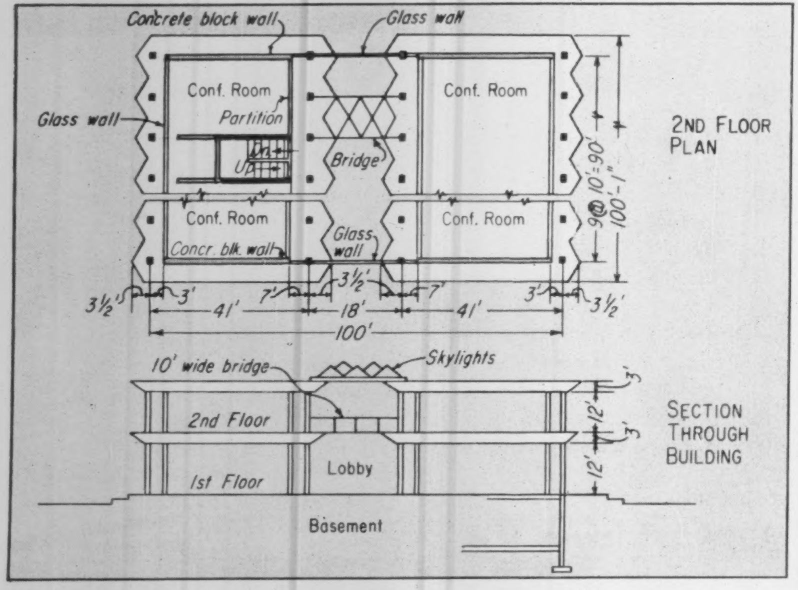


SECTIONAL VIEWS OF BEAM reveal pouring procedure. First, lower sides of the triangles were concreted. Then the upper parts were formed up and concreted.

• **Bridge spans lobby**—The basement covers an area 90 x 100 ft and the first floor 90 x 94 ft—reduced by wall setbacks. A lobby runs the full 90 ft length of the first floor, taking up the middle third; and on both sides, the structure rises like two separate buildings, divided by an 11 ft gap down the middle, above the lobby. At one point a 10 ft wide bridge spans the gap to link the two halves of the second floor.

Ten of the triangle-section beams side by side make up each half of the second floor and roof. The members are 48 ft long, 10 ft wide and 2 ft 10 in. deep. They are prismatic in form except at the ends, where the three edges converge to a point.

• **Two pours, ten beams**—Actually, the beams are not separate members at all, though each is supported by its own two columns. The contractor cast the 10 beams making up a half floor in two monolithic pours, the first for the sloping undersides of the triangles, the second for the horizontal deck. Hooked bars left projecting from the first pour and embedded by the second join the two pours structurally.



PLAN AND SECTION show the structure above the ground floor to consist of similar halves, joined only by skylights, glass end walls and a second-floor bridge.

The two rows of columns supporting each half of the second floor and roof run, respectively, along the basement wall line and 41 ft inside. Walls are set back 3 ft from the outer columns and 7 ft from the inside row, thus enclosing 31 ft room spaces for both first and second stories. The 7 ft interior setbacks create aisles along the sides of the lobby, separated from the main part of the lobby floor by columns every 10 ft and at second-floor level—where there is no central floor—by railings.

At roof level, frosted glass pyramidal skylights framed in aluminum and supported by a grid of steel members fill the gap between concrete sections.

• **Metal forms for deck**—The contractor supported his concrete forms on typical "forest-of-timber" falsework. For the sloping undersides of the triangle-shaped members, he used plywood form liners, and for the deck concrete, permanent metal forms, supported on ledgers cast into the sloped sections.

Concrete was placed with a crane and bucket. An 80 ft boom and 20 ft jib enabled the rig to reach every part of the building and thus obviated the need for wheeling any of the mix.

Stone concrete with a strength of 3,000 psi at 28 days was specified. Projections from the seven day tests, used to determine stripping time, indicated 28 day strengths of 3,600 to 3,800 psi.

First and second-story columns are structural steel, encased in concrete and embedded in the solid-filled ends of the concrete floor and roof members. There is no direct column-to-column contact from one floor to another.

• **Marble and glass**—Roman travertine and gray glass enclose the building. Side walls and the lobby end walls—containing the main entrances—are glass. The remainder of the end walls are concrete block faced with travertine. Undersides of the floor and roof members are furred out and covered with metal lath and plaster inside the building and sprayed with concrete outside the walls. The roof is builtup type with 1½ in. of rigid insulation.

The building is completely air conditioned. Instead of having its own boiler and air-conditioning plant, however, it will get steam from Detroit Edison and chilled water from another campus building nearby. The chilled-water lines and other utilities will run through an underground passage.

Yamasaki, Leinweber & Associates, Birmingham, Mich., handled the mechanical and electrical design as well as the architectural. The Minneapolis office of Ammann & Whitney, Robert H. Hopwood in charge, did the structural design. Darin & Armstrong, Inc., of Detroit, was the general contractor. W. J. Milroy was job superintendent.

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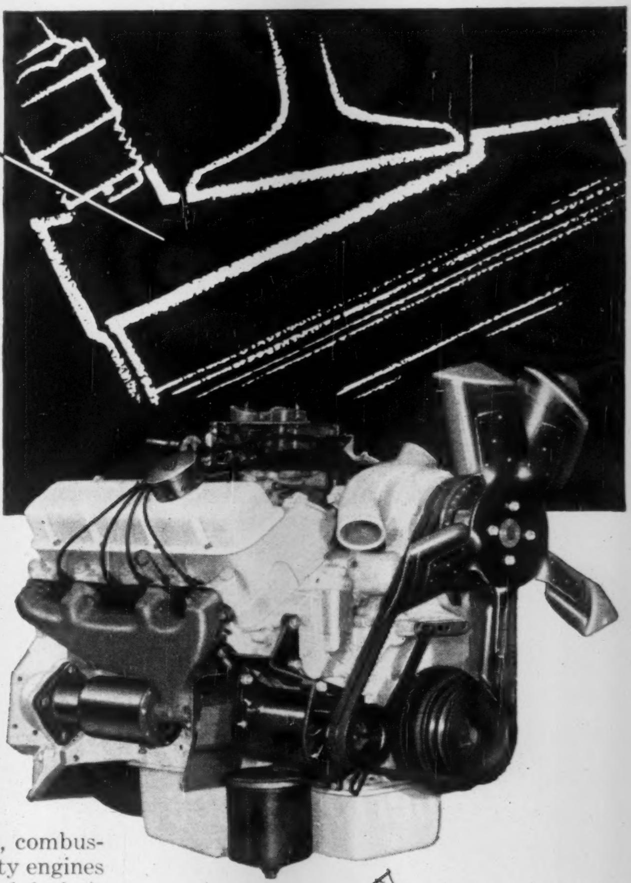

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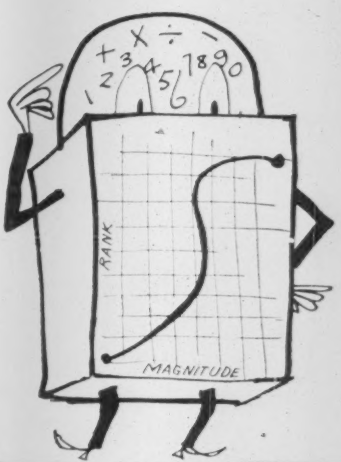
What Is an Ogive?

In brief, it's a diagram for presenting and analyzing data obtained from field observations or laboratory tests. You plot each observation against its cumulative frequency of occurrence, or probability that the number will (or will not) be equaled or exceeded. From the resulting curve, which is called an ogive, you can learn many useful things, such as whether your data indicate a trend, whether the observations are reliable, and what the average value of future observations should be so that none would be likely to be below a given minimum.



Here's a Simple Way to Interpret Data

Neal FitzSimons
Managing Director

Geo-Technology
Battle Creek, Mich.

You don't have to be an expert on statistics to use an ogive. It requires only a knowledge of some elementary concepts. Furthermore, you can produce this useful diagram with far less effort than needed for the usual statistical values, such as arithmetic means and standard deviations.

You can use an ogive, which is a probability-type curve, for analyzing numerical data in all phases of engineering–concrete strength tests, annual total precipitation, daily traffic flow on a highway, to mention only a few. But the data must be related. For quite often an analysis of superficially related data results in subtly deceiving conclusions.

An ogive clearly brings out important details that might otherwise be obscured by common statistical calculations. For this reason, it is generally desirable to construct an ogive before commencing tedious computations.

• **How to plot an ogive**—You can produce the curve by assigning a relative rank to the numbers to be analyzed and then plotting each number against its rank.

For example, let's plot an ogive for the data in Table I. This gives the compressive strength in psi reported in 10 tests of 28-day-old concrete cylinders from a particular mix, made in conformance with established methods.

The first step is to arrange the observations in numerical sequence. Next, assign a percentage to each value indicating the proportion of observations equal to or less than it, thus establish-

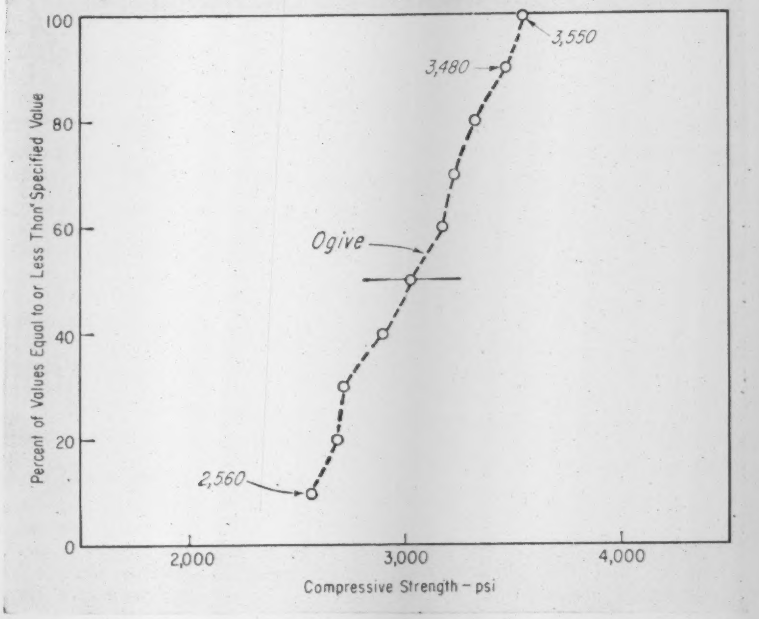


FIGURE 1—This ogive is a plot of compressive strength vs relative rank from the data in Table II, which corresponds to the test results given in Table I.

TABLE I
Sample Test Data

Test No.	Compressive Strength
1	3,340
2	3,550 (High)
3	2,710
4	2,560 (Low)
5	3,480
6	3,170
7	3,020
8	2,900
9	3,230
10	2,690

TABLE II
Data for Ogive Assigned a Rank

Rank	Value	Relative Rank*
1	3,550	100%
2	3,480	90
3	3,340	80
4	3,230	70
5	3,170	60
6	3,020	50
7	2,900	40
8	2,710	30
9	2,690	20
10	2,560	10

* Percent of values equal to or less than specified value

. . . The shape of an ogive tells a story

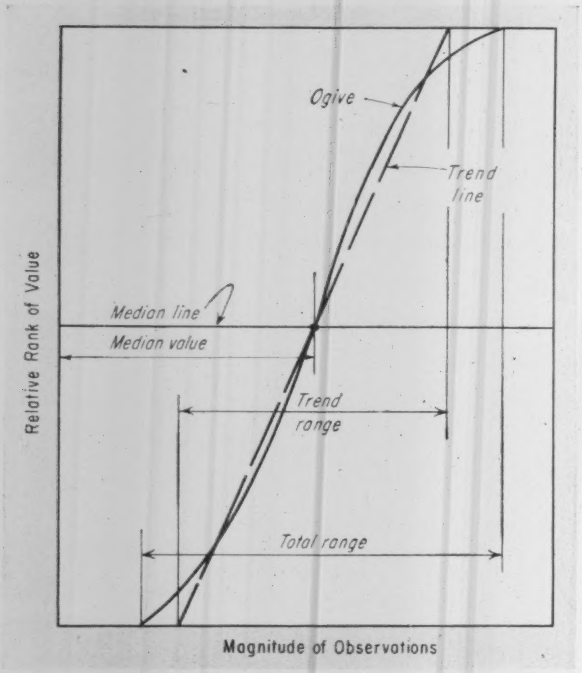


FIGURE 2—Typical ogive shape is the elongated sloping S. Characteristics that aid the interpreter are shown.

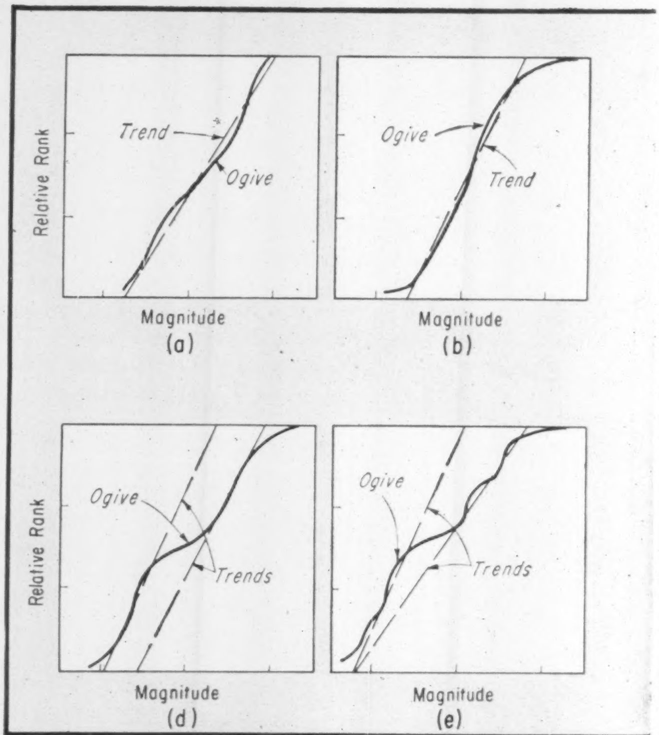


FIGURE 3—Variations in shape, slope and range of the ogives tell the experimenter how reliable his test results are. The nature

ing its relative rank.

Table II shows the results of the first two steps. It records that 100% of the 10 reported strengths are equal to or less than 3,550 psi, the largest value; 90% are equal to or less than 3,480, the next largest. And 10% are equal to 2,560, lowest of the 10 strengths.

You now obtain the ogive by plotting each number against its percentage, as shown in Fig. 1.

• **What scale to use**—To obtain an ogive to an appropriate scale, you should bear this in mind: Good practice requires that the smallest unit easily discernible (about 0.1 in.) should represent no more than the smallest significant figure of the data.

If, for example, the reported strengths are accurate only to the nearest 10 psi, then the unit that should represent 10 psi would be about 0.1 in. For convenience, 0.1 in. will be termed the basic scale unit. For a particular purpose, such as illustrating this article, larger values may be represented by the basic scale unit; but to utilize the ogive optimally, you should employ the largest applicable scale.

——TABLE III — Flexural-Strength—— Data for Job-Control Beams

	7 Day	28 Day
Mean	445 psi	526 psi
Median	440 psi	520 psi
Standard Deviation (Actual)	39 psi	42 psi
Standard Deviation (From Ogive)	37 psi	47 psi
Coefficient of Variation (Actual)	9%	8%
Coefficient of Variation (From Ogive)	8%	9%
Number of Tests	59	63
Minimum Flexural-Strength (Specifications)		500 psi

In selecting the scale for relative rank, you should consider also the number of observations in the set on which the ogive is to be based. Normally construction of an ogive for as few as 10 observations will not produce a particularly significant curve; nevertheless, you may be able to discover a trend. Consequently, each of the 10 observations in Table I are of more significance than a mere representation of 10% of the total data. In other words, you would be justified in letting the basic scale unit represent less than 10% of relative rank.

Experience indicates that for a small number of observations (say, from 10 to 20) the basic scale unit for relative rank might range in value from 2% to 5%. Largest sets would justify a basic scale unit of 1% or less.

• **Typical shape**—Ogives usually assume the shape of an elongated S, with long axis slightly inclined away from the vertical (Fig. 2). Variations from this typical shape are significant. If you can interpret these variations, you may discover important details sometimes lost in statistical calculations.

In most cases, a single straight line can be fitted to the majority of points in an ogive. This line indicates the trend of the observations. When there is difficulty in locating a single trend line, as often happens, the ogive requires closer examination.

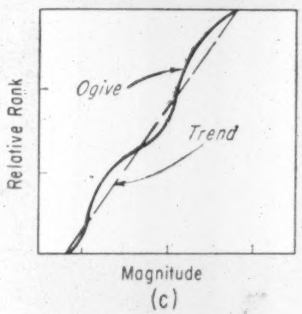
• **Ogive characteristics**—Useful terms characterizing an ogive that you should be familiar with include:

• **Total range**—Difference between largest and smallest observation.

• **Trend range**—Difference between the value at the intersection of the trend line and the 100% relative-rank and the similar value at the 0% line.

Sometimes, the total range and trend range are almost equal, as in Fig. 3a. An ogive of this shape probably indicates "good" data, unless the ranges are disproportionately large.

• **Variations from typical**—Fig. 3b illustrates a typical case of generally good data contaminated by a few erratics. Here, you see a very strong trend line, though the ogive makes radical turns near its extremities. (There are, of course, cases where erratics are found at only one extremity.) On occasion, you may find it appropriate to determine the cause of these erratics.



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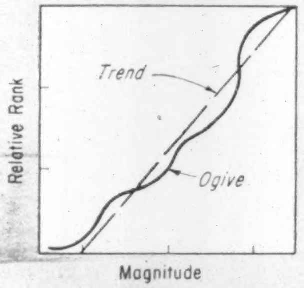


(f)

as well as the existence of faulty data may come to light in this way.

When you collect data over a lengthy period of time, you may find it necessary to plot ogives at intervals. At the start, with only a few observations available, the curve may show a series of undulations, similar to those shown in Fig. 3c. As more data are collected and the ogive revised, you should find that the undulations tend to disappear and that the typical shape of Fig. 3a is approached.

Unfortunately, undulations sometimes appear because the data were the result of haphazard testing or sampling. When this is the case, you may be warned by the ranges; large ranges are commonly associated with curves based on data collected haphazardly.

Situations where two or more trend lines are possible are illustrated by Fig. 3d, 3e and 3f.

You will find that two distinct trend lines on approximately equal arms of the ogive are more often than not nearly parallel (Fig. 3d). In that case, though the data were collected following accepted procedures, an unnoticed variable appears to have been involved.

Much the same can be said for the curve in Fig. 3e, where the trend lines are far from parallel. However, here the complicating factor of haphazardness in data collection also is apparent.

Departing even farther from the typical shape, the vague, wandering ogive shown in Fig. 3f calls for reappraisal, to ascertain whether the data have any real significance. When data represented by the ogives of Fig. 3d, 3e and 3f are indiscriminately cranked into statistical formulas, the results are misleading or completely erroneous.

• Useful relationships—A valuable characteristic of an ogive is that it provides a simple means of obtaining the standard deviation of the data for use in statistical formulas. (Standard deviation is a generally recognized measure of the dispersion of data.) This relationship offers an independent but approximate check on the long calculations.

When an ogive has a clearly discernible, single trend line, the standard deviation is approximately one-third the trend range.

If, in addition, you assume the observation corresponding to the 50% relative rank to approximate the arithmetic mean, you easily can obtain another important statistical factor—the coefficient of variation. (This is the ratio of the standard deviation to the average value, expressed as a percentage. It indicates the relative degree of dispersion of the data.) The assumption that the arithmetic mean equals the median value (50% relative rank) produces insignificant errors with a typical ogive.

• Example of use of ogive—Consider the two ogives in Fig. 4. They were plotted with flexural-strength data obtained in control tests of concrete on a construction project. One ogive represents the observations of 7 day strengths; the second, of 28 day strengths. Associated statistical data are given in Table III.

The ogives indicate "generally good" data contaminated by a few erratics. Trend lines are distinct, though the exact position of the one for 28 day curve may be open to question. Total ranges and trend ranges are not unusually large. However, after visual inspection of the curves, you would have good cause to label erratics those marked with an X, since they are much farther from the trend line than the other observations. (Nevertheless, this does not mean that they have no statistical significance.)

From a quick comparison of the two curves, you could conclude that the data for the 28 day tests are more variable, since the 28 day ogive is wavier. Yet, computed coefficients of variation are at variance with this conclusion. The differences in these coefficients, however, are negligible (see Table III).

When the data were collected, more than a little consternation resulted from the discovery that many of the 28 day strengths were well below some of the 7 day strengths. Had there been a strength retrogression?

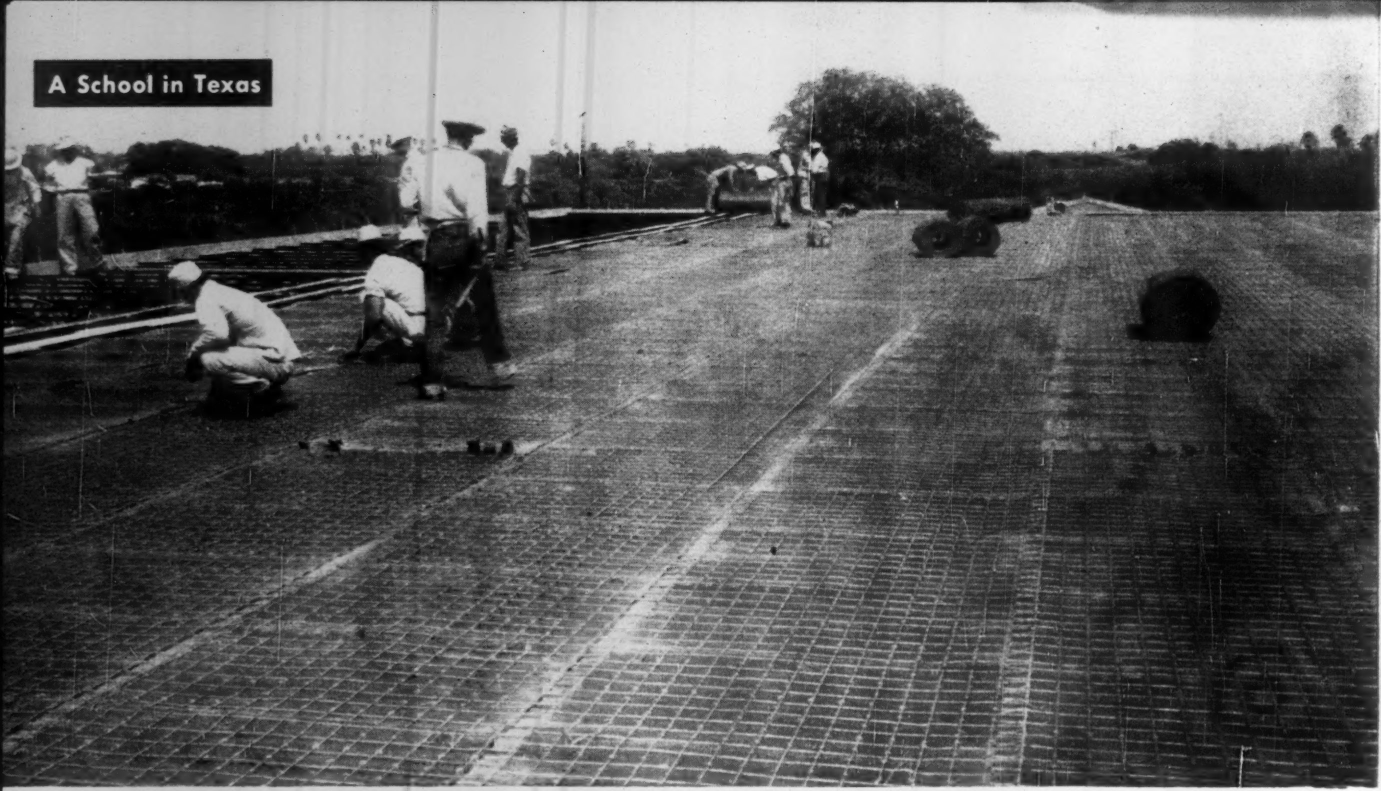
The answer was obtained from a study of the ogives (Fig. 4). Although 58% of the 28 day strengths are less than the highest 7 day strength, the distance between the trend lines of the ogives indicated a fairly normal strength gain of about 118%.

More disconcerting is the position of the 28 day trend line with respect to the specified minimum-strength line, at 500 psi. From a qualitative examination of the test data, you might easily conclude that the concrete complied with the specifications. However, the 28 day ogive clearly shows that 34% of the strengths were below the specified 500 psi minimum.

Perhaps of more significance is the hypothetical trend line that the test data should have developed had the contractor fully complied with specifications. Drawn with the same slope as the 28 day trend actually attained, and with the point 500 psi-0% as origin, the hypothetical trend line clearly shows that the concrete over-all was about 45 psi understrength. (In fairness to the contractor, it should be noted that several tests could have been less than the minimum without effecting the origin of the hypothetical trend.)

• How to stay above a minimum—Frequently, it is desirable to ascertain what the average strength of a trial mix should be to obtain a specified minimum strength on the job. In this case, you should:

1. Determine the project coefficient of variation, V, taking into account available plant, equipment, etc. Most contractors can obtain a V of 10% to 15% without great trouble. (A lower V indicates extremely uniform work; a higher V, a poorly controlled job.)
2. Make a first approximation of the standard deviation, by multiplying V by the specified minimum strength. For example, if the specified minimum flexural strength is 600 psi and the coefficient of variation is taken as 10%, the standard deviation would be 600 × 0.10 = 60 psi.
3. Construct a trend line for the first trial by connecting the points 600 psi-0% and 780 psi-100%. The figure 780 is obtained, assuming that the standard deviation is one-third the trend range, by adding to 600 three times 60. (See Fig. 5).
4. Find the strength associated with 50% relative rank—for this example, 690 psi.
5. Use this as a first approximation of the average strength and repeat steps 2, 3 and 4; i.e., in the example, substitute 690 for the minimum in step 2. Thus, the standard deviation will be 690 × 0.10 = 69 psi. The trend range will be 69 × 3 = 207; so the maximum strength will be 600 + 207 = 807 psi. Plotting the second-trial trend line, as shown in Fig. 5, you



Ease of Installation counted heavily with the architect and builder who used Steeltex for concrete slabs on the Travis Junior High School in McAllen, Texas. Architect: Zeb Rike of McAllen. Contractor: W. E. Crawford Co. also of McAllen. Steeltex was chosen because of its "low cost, ample supply, ease of installation and low labor costs."

No wonder Steeltex is used everywhere when . . .

Steeltex saves 55 working days on one job

A Hotel in Nevada

Elimination of forms was cited as a distinct Steeltex advantage by the architect for this job, the Riviera Hotel in Las Vegas, Nevada. When a 200-room addition was planned, Steeltex was specified for that, too. Architect: Roy F. France & Son, Miami Beach, Florida. Consulting Architect: J. Maher Weller, Las Vegas. Contractor: Taylor Construction Co., Miami, Florida.

On big jobs or small . . . in the East, West, North and South, you'll find Steeltex. Architects and contractors like the way it speeds work, cuts costs and makes better concrete slabs.

Steeltex, the Pittsburgh Steel wire mesh reinforcing that carries its own waterproofed form right on its back, is the answer to a big question that designers and builders face constantly:

"How can we maintain or improve quality on our tight budget and move in quicker?"

In California, Designer Robert Sherman, C.S.D., credits Steeltex with pulling him out of a jam when heavy rains and windstorms delayed construction of the $2,800,000 Villa Hotel in San Mateo.

For a while, Mr. Sherman said, it appeared that bad weather would hold up the opening past the start of the 1956 Republican National Convention in nearby San Francisco.

"When weather conditions finally let us go back to work, Steeltex saved us 55 working days or 20 percent of the total construction time," he related.

A Hotel in California
Villa Hotel
REALTOR

Speedy construction possible with Steeltex pulled the builders out of jam in construction of the luxurious Villa Hotel in San Mateo, California. This is the job where Steeltex saved 55 working days. Designer: Robert Sherman of San Mateo. Contractor: Pacific Development Co.

A TV Station in Alabama
WSFA-TV

Low cost of changing plans when Steeltex is used made a hit with the builders of WSFA Radio and TV Center in Montgomery. Architects: John Shaffer and A. L. Williams Jr. Structural Engineer: Cecil Williams. Contractor: Bear Brothers Construction Co.

"We completed the hotel in time for the Texas delegation to occupy their reserved rooms."

Mr. Sherman, who has used Steeltex on everything from a closet-size used car lot headquarters to a big office building, said, "Builders who overlook using Steeltex on small jobs are missing a good bet."

Now, jump north to Erie, Pa., where E. E. Austin & Son, Inc., built a new Airport Terminal at the Erie Airport which was designed by Nelson, Goldberg & Heidt, registered engineers and architects. Construction Superintendent John McKinnon said:

"We've laid acres and acres of Steeltex. You can't beat it on costs. Why, Steeltex installed costs less than the lumber alone if we had to build forms."

A similar commendation came from Texas where the $380,000 Travis Junior High School is the pride of McAllen, Texas. For that job, Architect Zeb Rike chose Steeltex for 43,698 square feet of second floor and roof deck because of its "low cost, ample supply, ease of installation and low labor costs for installation."

On the same job, Contractor W. E. Crawford declared he had always gotten "fine results with Steeltex."

"All you do is unroll it, tighten it, clip it and pour concrete. I'd recommend Steeltex any place a fine masonry deck is needed."

In Las Vegas, Nevada, where there's no gambling in building construction, Steeltex was specified by Architect Roy F. France Sr. for 108,000 square feet on nine floors of the Riviera Hotel and a new 200-room addition. Mr. France said:

"Steeltex eliminated extra work because it did away with forms. It permitted quick installation and made for a less expensive job."

On a new office and studio building for Station WSFA in Montgomery, Alabama—the $145,470 WSFA Radio and TV Center—the building schedule was tight because of commitments made to the FCC.

Here Architects John P. Shaffer and Albert L. Williams Jr. found:

"Steeltex let us get the building closed in quicker and also allowed us to change our minds on the layout of the floor conduits required by a modern TV and radio station. We were grateful that Steeltex permitted us to make changes with a minimum of loss and delay."

Steeltex can provide savings in time and money for you, too, while giving you better, higher quality slabs.

Cash in now on the advantages of using Steeltex. You can do it by calling the nearest Pittsburgh District Sales Office listed below. Do it today.

An Airport in Pennsylvania

The low cost of Steeltex compared to lumber for forms was cited during work on the new terminal at Port Erie, the airport at Erie, Pennsylvania. Architect: Nelson, Goldberg and Heidt of Erie. Contractor: E. E. Austin & Son, Inc., of Erie.

▶ **See Sweets Catalog Section 2-B**

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. . . Ogive characteristics can be used in planning job control

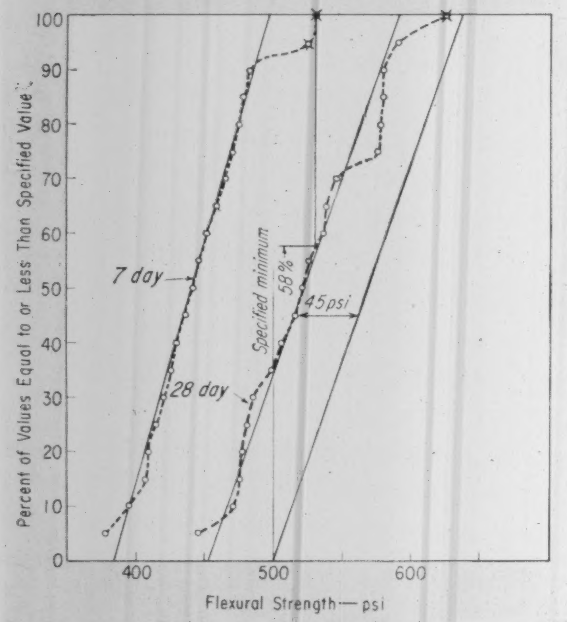


FIGURE 4—Ogives comparing 7 day and 28 day tests of concrete reveal normal strength gain but insufficient final strength.

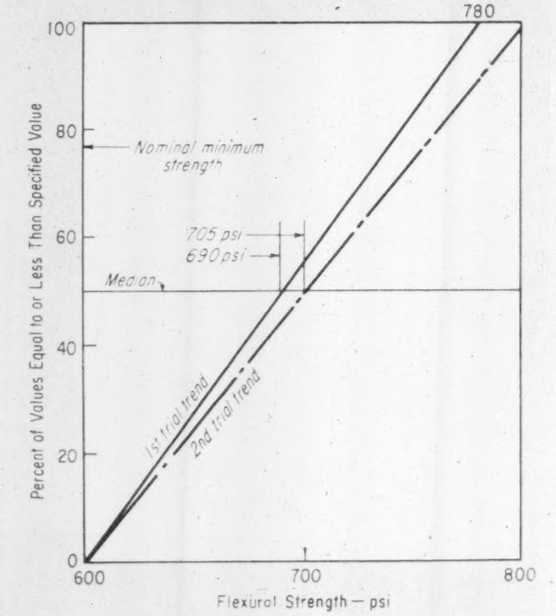


FIGURE 5—Ogive characteristics can be used to determine the average strength necessary to maintain a desired minimum.

will find the second average, 705 psi, will be close to the desired average.

A similar, but arithmetical shortcut, based on this graphical procedure, also is possible.

• How to judge field control—The economy of good construction control is vividly shown by an application of the trend line. In Fig. 6 are plotted trend lines corresponding to coefficients of variation ranging from 5% to 20%. From this diagram you can determine the influence of the coefficient on determination of average strength required in design of a trial mix for concrete of specified minimum strength.

If the nominal minimum is 3,000 psi, for example, poor control (V = 20%) would require the design mix to have an average compressive strength of 4,250 psi, as indicated in Fig. 6. With improved control, the average required could be as low as 3,250 psi, or 1,000 psi less. Naturally, the lower average reduces cement requirements markedly.

• Variety of applications—Ogives have been used successfully in many other ways. Besides applications in the fields of hydrology, traffic analysis and concrete testing, they have been employed in studies of soils (CBR observations, field densities, Atterberg limits), asphalt(stability, extractions), and characteristics of aggregate (specific gravity, absorptions for highly controlled mix designs), to mention only a few.

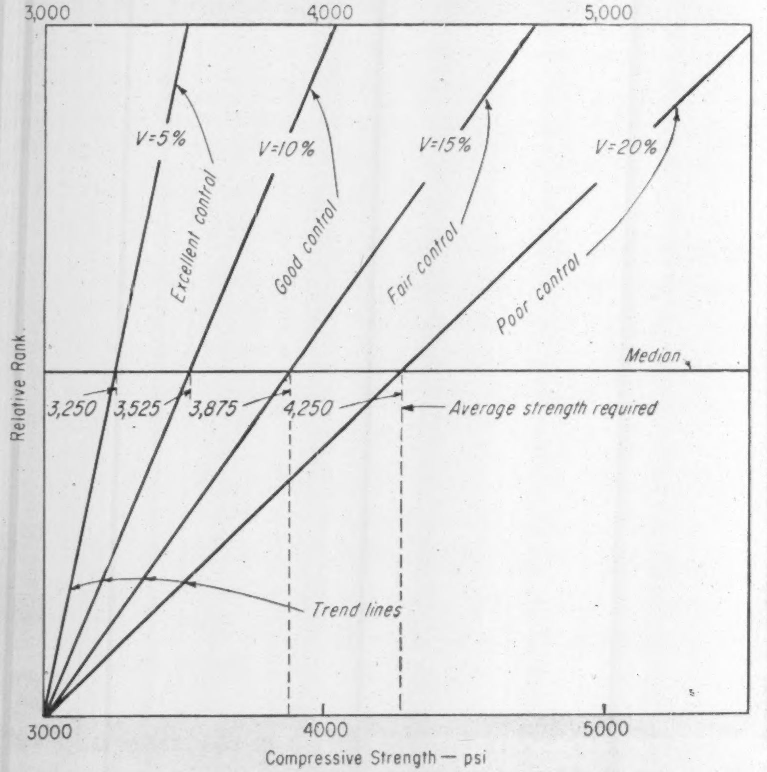
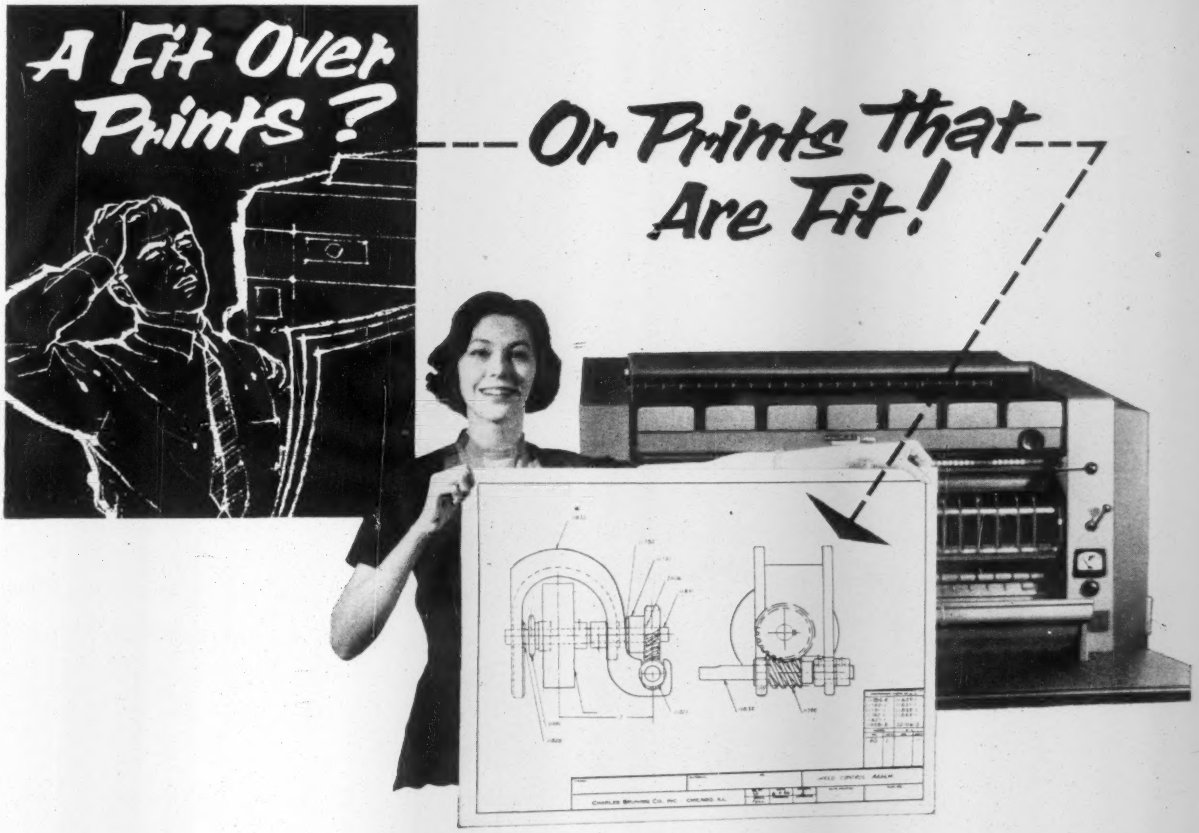


FIGURE 6—Ogive characteristics show that to attain 3,000 psi minimum, concrete strength must average a third higher with 20% variation than with 5% variation.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Can We Identify Non-Hydrologic Water?

EDITOR'S NOTE—*Michael Salzman's article "Where does Groundwater Come From? (ENR Nov. 28, 1957, p. 32) prompted this additional insight into the intriguing possibilities of "juvenile" or "primary" water and why groundwater hydrologists have done little about it. H. E. Thomas has spent a long career on groundwater hydrology. D. E. White's interest lies in research on waters of non-meteoric orgin, upon which the following comments are based.*

Mr. Salzman's contribution stemmed from an article concerning a water problem encountered during the construction of an annex to Harlem Hospital in New York City (ENR June 20, 1957, p. 46). Source of a warm (68F) underground flow that reached several million gallons per day has never been found, but Messrs. White and Thomas, from their experience in the West, are willing to wager that it is meteoric.

H. E. Thomas and D. E. White
United States Geological Survey
Menlo Park, Calif.

As the use of groundwater increases, many persons will become interested in a relatively unexplored source of it, namely non-meteoric water that geologists have described as having originated by recrystallization, dehydration, compression and cooling. Have we neglected such possible sources, particularly where meteoric water is scarce?

How exhilarating it would be to tap a source of proved juvenile water—it would be independent of the hydrologic cycle, and perhaps beyond the realm of established water law.

It is difficult to recognize juvenile water because it has never before appeared at the earth's surface. One may follow Mr. Salzman's lead in listing juvenile and rejuvenated water together. A logical classification of nonmeteoric waters might thus correspond to the classification of rocks—igneous, metamorphic and sedimentary, followed by further gradations among the three types.

Magmatic water is in, or derived from, magma, and has been called *plutonic* if it originates at great depth, and *volcanic* if it comes from near the surface. *Metamorphic* water is associated with rocks during their metamorphism, and probably is derived from hydrous minerals during recrystallization to anhydrous minerals at depths of thousands of feet, where temperatures are probably more than 400 F. *Connate* water is interstitial water in unmetamorphosed sediments. It is mostly of meteoric origin that has been out of contact with the atmosphere for a very long period.

The hydrologic cycle includes a distillation process of vaporization and precipitation that has no counterpart in the development of nonmeteoric waters, except for volcanic steam. Thus meteoric water is more apt to be fresh, while nonmeteoric waters will almost always be highly mineralized. This explains why groundwater hydrologists have been concentrating on meteoric waters.

Meteoric water usually is found near the earth's surface, but in some sediments, fresh water has been found at depths more than a half mile below sea level. There is a greater chance, however, that "deep" waters are of nonmeteoric origin.

Some waters of deep origin are believed to be recognizable by their chemical composition. Oil field brines dominated by sodium and calcium chlorides differ markedly from ocean water. In general, brines are believed to be connate in origin although they may contain some meteoric water, depending on the degree of flushing. Many brines are higher in salinity than sea water.

Volcanic waters are similar to connate waters but are believed to be distinguishable by higher temperature and associated heat flow; by relatively high contents of lithium, fluorine, silica, boron, sulfur CO_2, arsenic and antimony. Similarity to connate waters also is seen by relatively low calcium and magnesium and by lack of hydrocarbons, water soluble organic compounds, and perhaps ammonia and nitrate. High boron and combined CO_2 alone, however, are not reliable indicators of a volcanic origin.

During compaction that follows deep burial, sedimentary rocks lose most of their interstitial high-chloride water, and additional water may be lost during progressive metamorphism. The expelled water has been called "metamorphic". Because pressure increases downward and permeability of rocks increases upward, water generally must escape upward and mix with connate and meteoric water. Even though large quantities must exist, no example of metamorphic water has been positively identified.

Recent studies of the isotopes of hydrogen, tritium, deuterium and oxygen have provided new tools for determinations of the origin of groundwater. Finding tritium in a sample would be conclusive evidence that the water is meteoric. But absence of tritium is not proof of non-meteoric origin, since after 50 years in meteoric groundwaters tritium content becomes too low to be measured.

Analyses of deuterium and heavy oxygen (O^{18}) content of groundwater have shown that fresh groundwaters should be relatively depleted of these heavy isotopes. And any deep water of nonmeteoric origin that is rising to the surface is apt to be very different isotopically from the meteoric water that characterizes the area into which it rises.

Mr. White has found from isotope analysis that although observed temperatures and calculated heat flow in the thermal springs of many volcanic areas, even in these areas the thermal waters have a volcanic component that probably does not exceed 5 to 10% of the total. Meteoric water circulates to great depths and in places mixes with a small proportion of magnetic water.

It also has been shown that any large water supply flowing to the surface from great depth must be anomalously high in temperature. Generally temperature rises 1 deg F per 100 ft depth below the surface. A small quantity of water could rise slowly and lose most of its heat by conduction, but fast flowing water should arrive at the surface with most of its original heat. The evidence seems clear that fresh water of low temperature is virtually certain to be entirely, or nearly so, of meteoric origin.

References to additional works:

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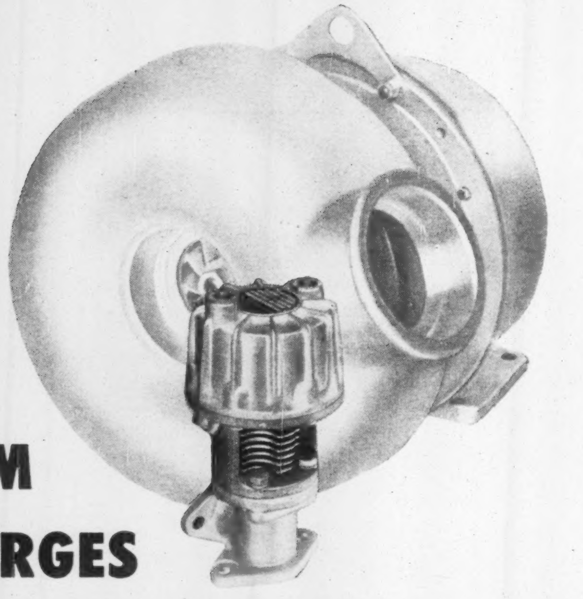

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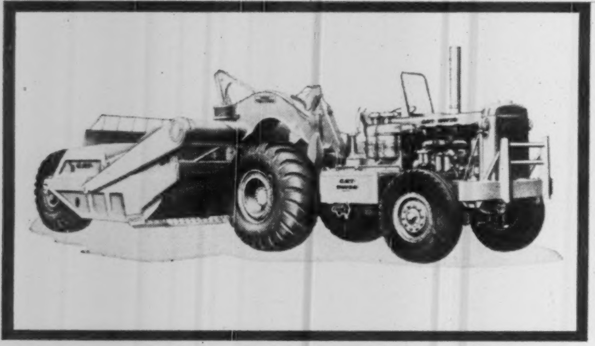

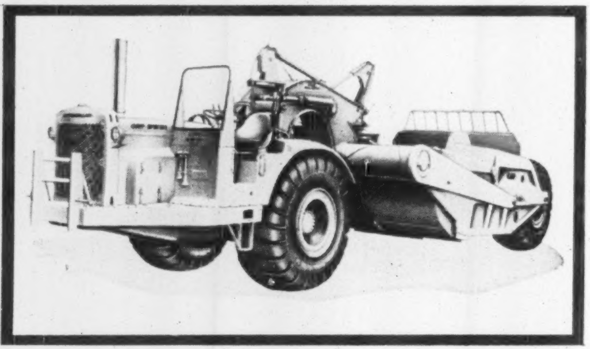

New AiResearch Pressure Ratio Controls *substantially increase lugging ability and travel speed* of Caterpillar DW20 and DW21 Wheel Tractors equipped with AiResearch T-15 Turbochargers.

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The two components of the new AiResearch Pressure Ratio Control unit are a pressure ratio sensor and exhaust by-pass valve. They allow the turbocharger to operate at maximum boost pressure over a wide range of engine speeds and operating conditions, thus maintaining turbocharger speed, and hence engine air input, at higher levels while lugging. This improves the overall performance match of a free-floating turbocharger.

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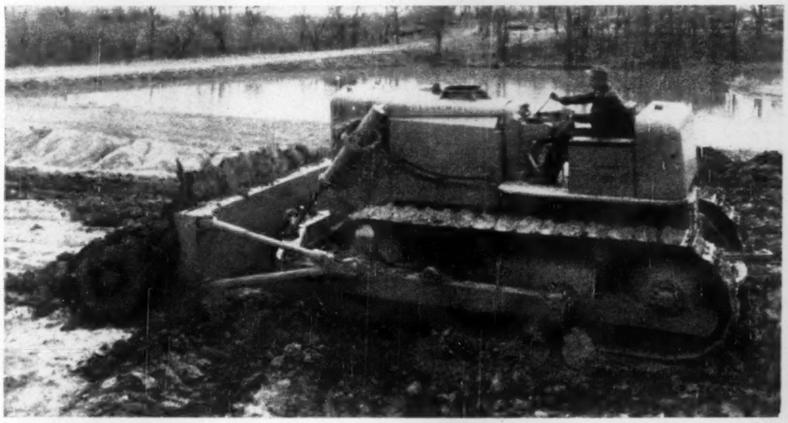


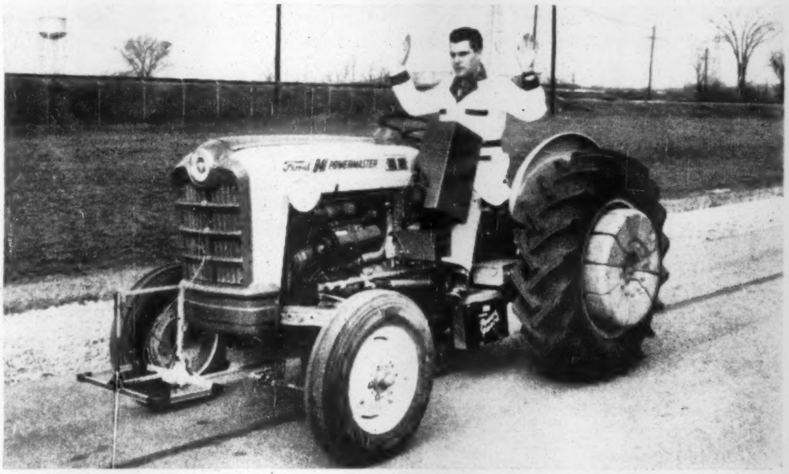
Experimental Tractor Is Turbine Powered

An early experimental version of what may be the crawler tractor of the future uses a high-speed gas turbine, according to Allis-Chalmers Manufacturing Co., Milwaukee.

The experimental model, named the P-91, has been assembled in the course of the company's research and development plans. Inside the tractor's engine compartment lies a Boeing Model 502-10C gas-turbine power unit, replacing the conventional diesel engine.

Involved in the gas turbine design is the equivalent of a built-in torque converter, which is being tested for its speed, power and flexibility—requirements for successful tractor operation.

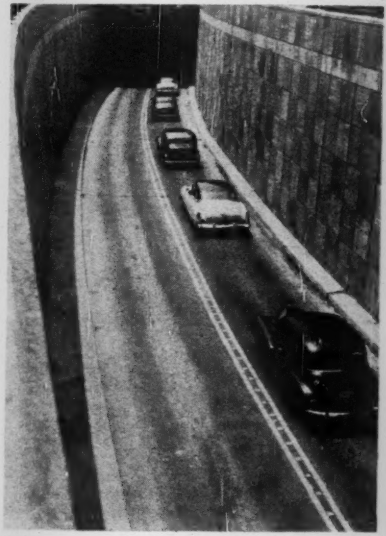
The turbine develops a net horsepower equivalent to the diesel counterpart, according to company officials. And they say that exhaust gases, while greater in volume, have been handled in such a way that inconvenience to the operator is avoided. Noise level, while of a different pitch and character than the sound associated with the diesel power unit, is reported to be equal to the conventional-type tractor.



Driverless Tractor Is Shown to Public

An electronically-guided industrial tractor will make life easier for the abused test driver who has been riding for years, in all kinds of weather, over bone-jarring obstacle runs.

The driverless tractor had its first public showing last month, but has been in actual use at Ford's Research and Engineering Center at Birmingham, Mich., for the last three years. The vehicle, named the "Sniffer", was demonstrated before the Special Com-



Sound Powered Telephones for tunnels bridges highways and similar arteries

Help to keep traffic rolling . . . to ease tie-ups . . . to report changing conditions.

NEED NO CURRENT

Theses phones provide positive communication at all times without the use of batteries or other outside sources of current. Operate with unusual clarity over a distance of many miles. In outdoor or indoor models—in standard systems or those altered to your specifications.

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Today's Modern Water Tanks Prestressed Concrete Type

Long and Short Term Economies Making Them Popular

A modern prestressed concrete tank is not only economical in first cost, but because of its almost maintenance free character, offers any municipality real long term economy. Any tankage engineering study should include calculated maintenance costs over the estimated life of the facility. Average yearly maintenance on a 3,000,000 gallon steel tank is estimated at $2500 per year at current prices. For a prestressed concrete tank, maintenance is negligible; however, occasional painting for color effect may be desired.

When the charges for servicing the initial cost plus relative maintenance allowances are plotted, the prestressed concrete tank will often show a lower out of pocket cost to the owner in less than 5 years. When these costs and

their increases are extended for an expected service life of 50 years, the savings to the owner with prestressed concrete are enormous.

The prestressed concrete tank is also a good looking tank . . . it is inherently strong and extremely stable . . . it is designed and built for permanence. And, 75% of the contract price is spent right in your local community . . . construction is done with materials and labor available locally.

Write today for more information on Preload Prestressed Concrete Tanks.

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PRELOAD MIDWEST CONSTRUCTION CO.
2211 East 19th Street, Kansas City, Mo.

HERRICK IRON WORKS
28400 Clawiter Road, Hayward, California

THE PRELOAD COMPANY, INC.
Jefferson Tower Bldg., 351 Jefferson, Dallas, Tex.

mittee on Highway Safety of the Michigan Governor's Conference at Ford Engineering's test track in Dearborn.

A small antenna unit between the "Sniffer's" front wheels picks up an electrical signal from the thin wire buried in the test track, and controls the tractor's steering mechanism. Another antenna unit under the vehicle receives start-stop signals that are sent over the wire, and controls the tractor's clutch and brake. Thus, if the signal is lost the tractor comes automatically to a stop. Electronic components are located in a cabinet on the right side of the tractor—shock-mounted to protect them from the constant jarring and vibration.

Final plans for the device call for addition of an electronic computer in the near future that will adjust the tractor's throttle according to a predetermined pattern. This will give the tractor full automatic speed control. At the present time the tractor can operate at fixed speeds only.

Asphalt Molecular Structure Probed

Chemical researchers may be on the way to uncovering some of the mysteries of the chemical composition of asphalt. And such answers may provide the key to questions of why one type of asphalt paving will hold up well under extremely low temperatures while another will break up under frost conditions.

The original research work that produced this new knowledge was described by Standard Oil Co. of Ohio's H. F. Hardman in a paper delivered last month at the national meeting of The American Chemical Society in San Francisco.

Essentially, the studies concern the investigation of the molecular structure of the hydrocarbons making up the asphaltic material. The studies made use of recently developed chemical testing instruments that made it possible to delve into these unseen secrets of the asphalt family. One of these pieces of equipment was an infra-red spectroscope, another was a device that devines the nuclear composition of substances by magnetic resonance—feeding this data through to the infra-red spectroscope for analysis.

The tests were run on 10 fractional distillations of a mid-continent paving asphalt. As it turned out, the bottom fractions were 30,000 times more viscous than the top fractions at the same temperature. Results of the test indicated that the fractions studied ranged in composition from the fairly simple aromatic structures at one end (alkyl naphthenes) to the highly condensed aromatic (aromatic-naphthenic) molecular structures at the other.

It is believed that further study of the composition of asphalt will help manufacturers maintain a better quality control.

In addition to the more "practical" study of molecular structure, during the course of these tests the existence of stable free radicals was found in this asphalt. Free radicals (those that are chemically active and contain an unattached bond) generally do not exist in nature in a free or unatainable state, since their composition makes them chemically active—seeking to form a chemically stable compound. However, in the fractions studied that contained a more highly condensed aromatic ring structure, free radicals were found to be abundant.

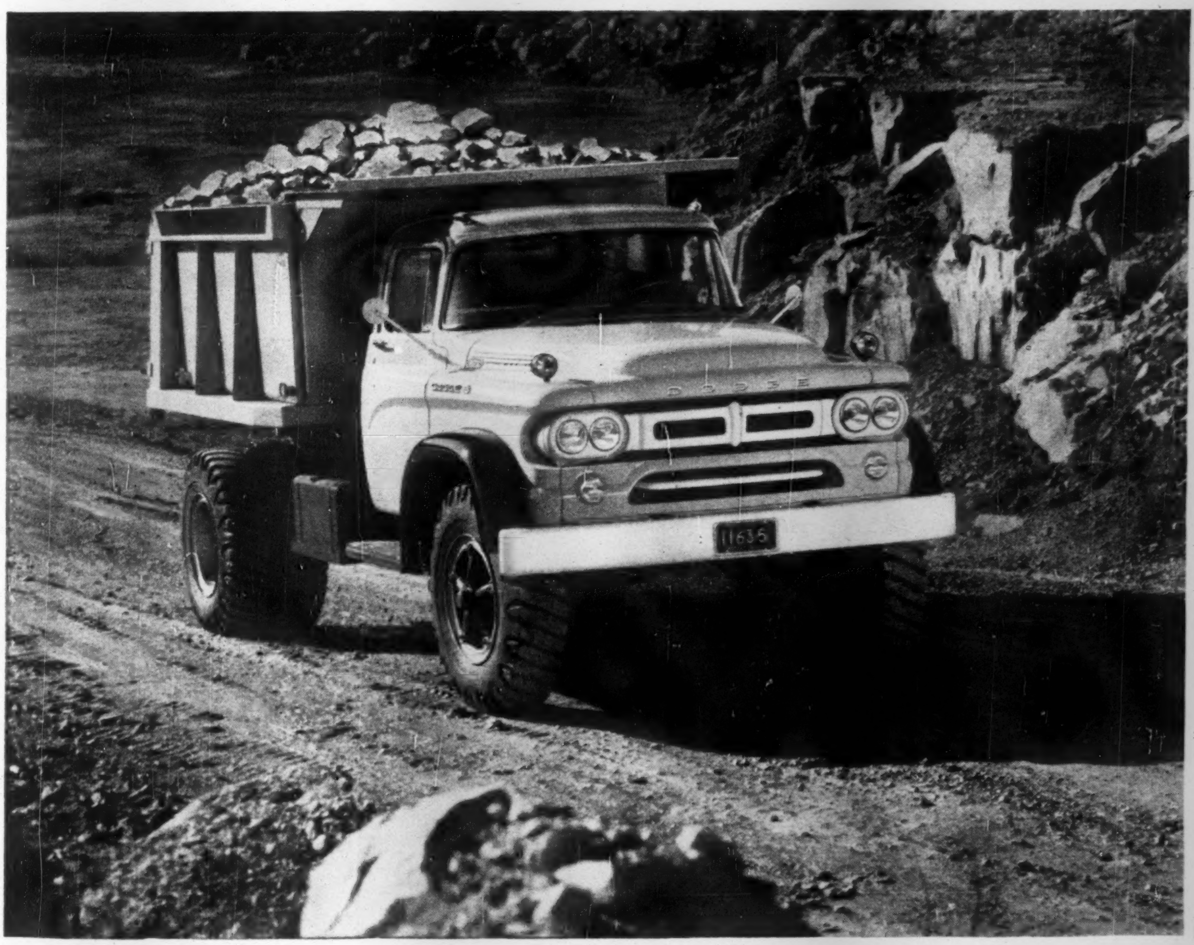
The researchers consider this discovery extremely significant since it was the first time that free radicals had been found in ordinary petroleum fractions, although they have been known to exist in coal tars and other substances. The research chemists theorize that the reason for their existing in the free state is that they become surrounded with an aromatic ring to such a point that, while they are still chemically active and willing to "mate" with the proper chemical substances, they are physically hindered from doing so by the aromatic ring molecule that surrounds them.

Body Heats Battery Vest For Use in Cold Areas

A battery vest, utilizing human body heat to keep dry cells warm and active for radio operators in very cold weather, is being developed by the U. S. Army Signal Research and Development Laboratory, Fort Monmouth, N. J. Cell batteries placed in a vest-like garment are worn beneath parkas to capture body heat. A cord is used to plug in standard Army radios.

This technique is valuable because batteries go dead quickly when extreme cold slows down their electrochemical action, and keeping them warm is difficult when troops are on the move. However, with the vest, batteries developed for low-temperature use are expected to stay in service 10 times longer in 40 deg-below-zero weather.

The vest has been field-tested rigorously in Alaska. Test models were built by Burgess Battery Co., Freeport, N. Y.



Dump body mounted on Dodge 900 chassis with Custom cab.

Dodge Heavy-Duty Finance Plan is designed to save you money!

Need a new truck, but need to watch your working capital, too? The Dodge retail finance plan for heavy-duty trucks was designed for just that situation. It lets you operate modern, efficient trucks without burdening yourself with excessive finance charges.

Designed with the same understanding of truck problems that has made Dodge *Power Giants* outstanding, the Dodge Heavy-Duty Retail Finance Plan is tailored to your needs. Whether you need one truck or several, you can finance your purchase with a minimum down payment, and with lowest financing cost. Payments can be arranged over an extended period.

What kind of equipment can be financed with this plan? Any Dodge medium-duty, heavy-duty (400 through 900 models) or four-wheel-drive trucks, plus extra equipment, including bodies mounted on the trucks.

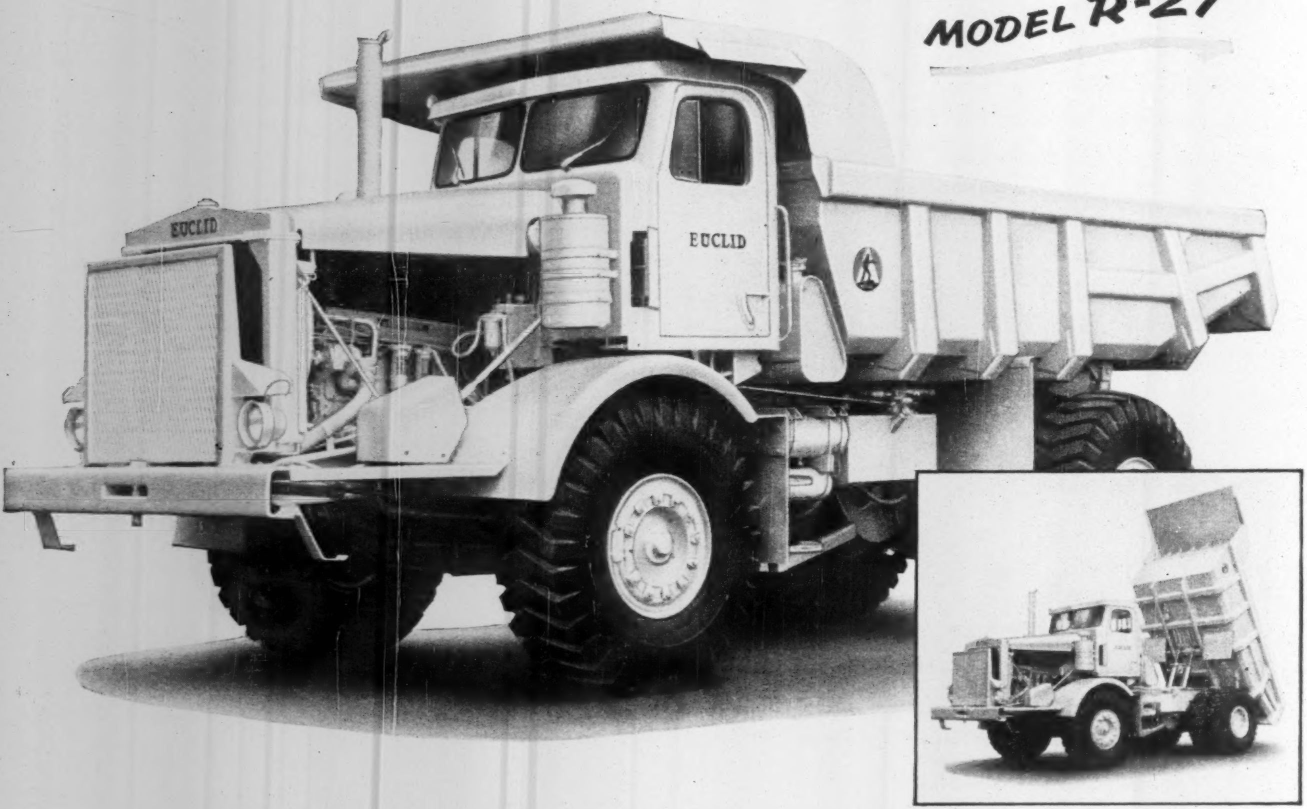
This new plan makes it both easy and economical for you to get *Power-Giant* advantages: exclusive Power-Dome V-8 engines that keep maintenance at a minimum . . . rugged "Job-Rated" construction . . . famous Dodge economy and dependability . . . advanced Dodge styling.

Let your Dodge truck dealer show you how this Heavy-Duty Retail Finance Plan helps truck operators with established credit own thrifty new Dodge *Power Giants*. See your dealer soon.

DODGE *PowerGiants*

27 ton "EUC"

MODEL R-27



325 or 335 h.p. . . . Torqmatic Drive . . . 18.00 x 25 tires

Model R-27 is a new size in the complete line of Euclid Rear-Dumps—rated payload is 54,000 lbs. This off-highway hauler incorporates the job-proved components which have made Euclid Rear-Dumps the outstanding choice of contractors, mines and quarries.

With either 325 h.p. GM diesel or 335 Cummins engine, the Allison Torqmatic Drive makes maximum use of the power for faster hauling cycles. Converter lock-up in the 4-speed Torqmatic permits 34 mph speed with full payload and efficient performance on long, high speed hauls.

Standard 18.00 x 25 tires on all four wheels assure the traction and load carrying capacity needed for moving 27-ton payloads on tough hauls. Standard body is rated at 18 cu. yds. struck—quarry type body is also available. The R-27 is equipped with oil retarder for safer, more economical braking on jobs with steep down-grades on the loaded haul.

See your Euclid dealer for detailed specifications on this new 27-ton Rear-Dump . . . it's a good example of the advanced design that makes Euclid your best equipment investment.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

GM GENERAL MOTORS

EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

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It's new...but JOB PROVED!

Big 18.00 x 25 tires on all wheels permit better distribution of payload. Rugged body and frame are designed to withstand loading, hauling and dumping big loads of heavy excavation year in and year out. Quarry body is available for rock work.

Low loading height and good maneuverability of the R-27 increase the efficiency of loading equipment. Exhaust heated body for work with wet, sticky material is optional. Front and rear springs are thrust-mounted and free floating, with variable spring centers.

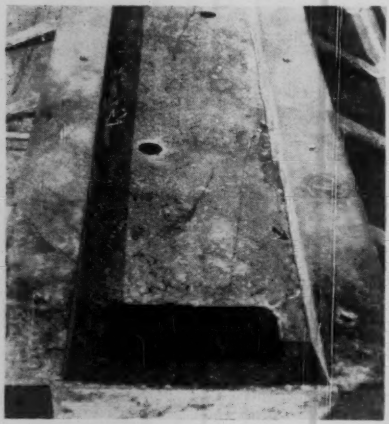
The R-27 is equipped with dual steering jacks—one for each wheel—and an independent hydraulic system for steering. Oil retarder—an integral part of the Torqmatic Drive—permits faster safe travel speeds down grade and reduce brake maintenance cost.

Large capacity hydraulic pump and twin hoists have ample power to raise and dump the load fast. Mounting brackets for the two stage double acting hoists are an integral part of frame assembly. Comfortable, well insulated cab is offset for maximum visibility.

A COMPLETE LINE OF REAR-DUMPS—

10, 15, 18, 22, 27, 40 and 50 ton capacities, also semi-trailer models of 12, 22 and 35 ton payload—to fit any job

Field and Office



CRACKS in treadle bed were caused by traffic's constant pounding. Loose concrete under baseplate "gave" to split at edges.

STIFFENED DESIGN adds steel I-beam supports, pads steel baseplate and enlarges access holes for concrete vibrators during pour. Reinforcing steel ties in pavement.

Steel Bracing Aids Toll Plaza Treadles

Richard A. Haber
Chief Engineer
Delaware State Highway Department

Under the impact of some 126 million axle loads since the opening of the Delaware Memorial Bridge in 1951, the toll plaza's treadles stopped giving accurate vehicle counts. While the counting mechanisms held up well, the treadle beds themselves became sources of trouble, particularly those subjected to heavy truck loads.

With continual pounding of heavy traffic, many of the beds loosened in their concrete base so that they "gave" as the vehicles passed over, disrupting the accuracy of the count. And with progressive concrete cracking, the count's inaccuracy got worse.

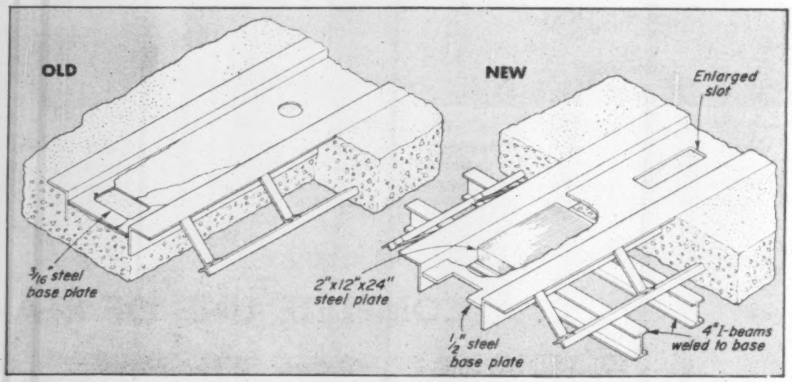
As originally designed, the bed used a 3/16 in. steel supporting base for the mechanism. And support was given the unit with outriggers to the side of the angle irons, tied in to the roadway by surrounding it with reinforced concrete.

To gain both strength and rigidity for the bed structure, Charles H. Salmon, bridge superintendent, John J. Leonard, maintenance superintendent, and John R. Lewis, resident engineer with Howard, Needles, Tammen and Bergendoff, consulting engineers for the bridge, came up with a new design.

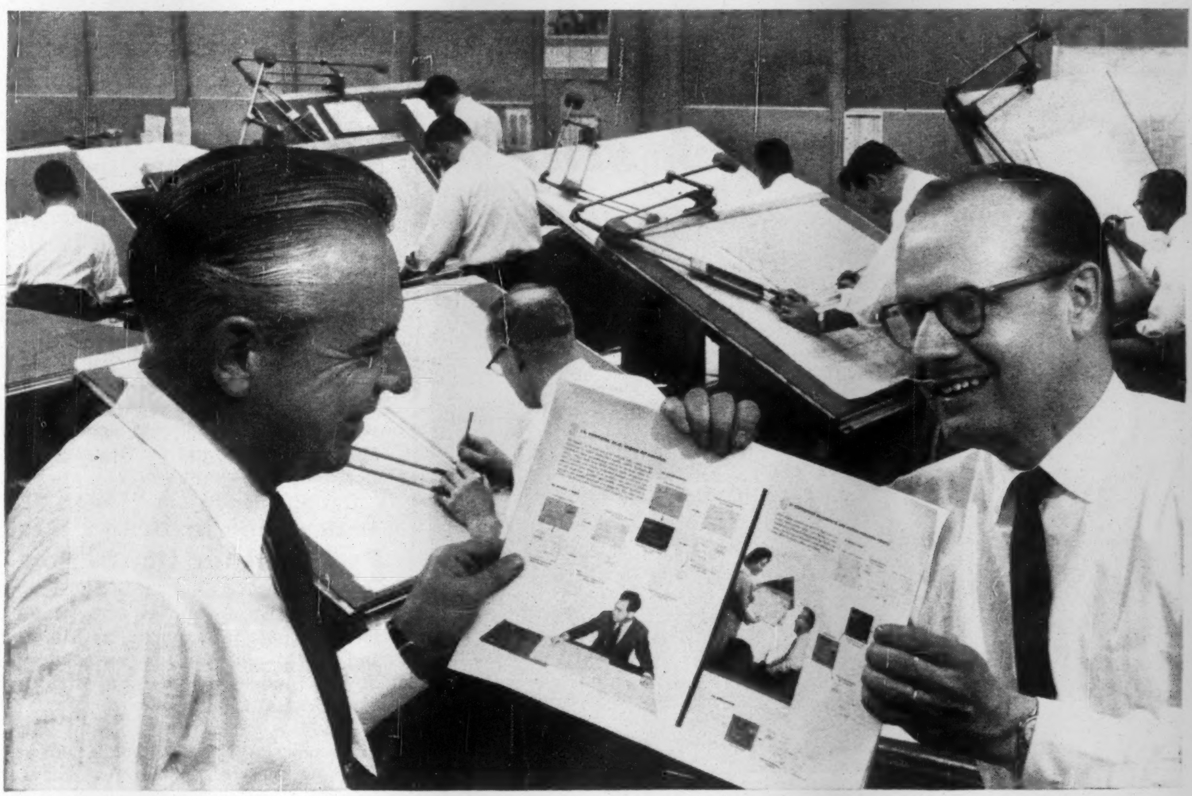
They increased the base plate thickness from 3/16 to ½ in., while filling the 2 in. below the plate with a pair of 2 x 12 x 24 in. steel plates welded directly below the base plate at the two points where vehicles' wheels most often touched. Then they set four 4-in. I-beams perpendicular to the axis of the treadle and welded these to the 2 in. plates and the angles. Finally they cut larger holes in the center so that the concrete vibrator could be more easily used during the pour.

Final refinement was in Mr. Salmon's use of stainless steel bolts to replace the original machine steel bolts. He expects the stainless steel bolts to damage the insert less than did those of the original design—avoiding costly digging out and replacement.

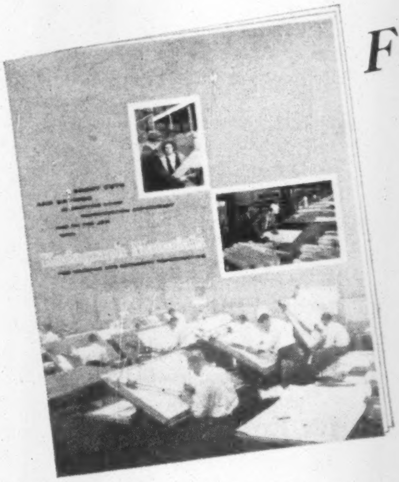
(*Field and Office continued on page 64*)



STEEL BASEPLATE thickened along entire treadle bed while added support is given to points of greatest wheel impact by 2 in. plate and 4 in. I-beam bracing.



Here's a new booklet packed with short cuts you can use right now!



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Reduce the weight

of concrete deck slabs!

LaClede Station Road Overpass, St. Louis County, Missouri. Designed by Missouri Highway Dept., John Williams, bridge engineer, Jim Pasley, ass't. Samuel Kraus Co., contractors.

form voids with low-cost

SONOCO

SONOVOID

FIBRE TUBES

Best way to reduce the weight of a concrete slab is to use SONOVOID Fibre Tubes to displace low-working concrete at the neutral axis. You'll save concrete and reinforcing steel, too!

In the deck of the LaClede Overpass (illustrated), 14" O.D. SONOVOID Tubes were used to form the voids.

Low-cost Sonoco SONOVOID Fibre Tubes have been used in decks of many bridges all over the country.

These fibre tubes have been specifically developed for use in bridge decks, wall, floor and roof slabs and in concrete piles. For precast, prestressed units or units cast in place.

Available in sizes from 2.25" to 36.9" O.D., in any length which can be shipped. Order in specified lengths or saw to your requirements on the job. End closures available.

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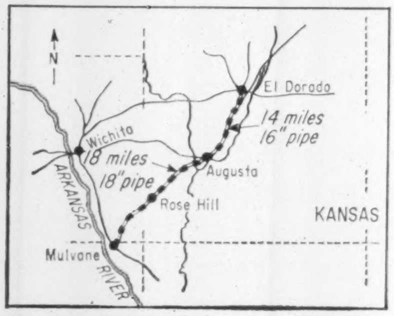


32 MILE PIPELINE that was filled with nitrogen to purge water and air to prevent corrosion extends from the Arkansas River on a Santa Fe Railroad bed.

Water Line in Deep Freeze Preserved for Dry Season

A unique method of preserving a standby water pipeline has been adopted for a 32 mile feeder between Mulvane and El Dorado, Kan., by the engineers of the Linde Co., Division of Union Carbide Corp.

The pipeline, which is 16 and 18 in. in diameter, was sealed at both ends and filled with gaseous nitrogen. The gas serves two purposes. It purges water and air from the line and remains in the line as a "blanketing" agent preventing corrosion.

More than 250,000 cu ft of nitrogen was required. The gas was delivered in mobile units in liquid form, then converted and pumped into the pipe—all in 50 hours. Since nitrogen will prevent internal corrosion indefinitely, the pipeline can be put into operation at a moment's notice.

The pipe was laid as an emergency measure several years ago to avert disaster when the cities of Augusta and El Dorado were faced with the possibility of being completely without water. It draws from the Arkansas River.

The two cities and three local oil refineries, Skelly, Socony Mobil and El Reco, banded together to form the Augusta-El Dorado Water Association. Some $1.6 million was raised and the line erected in 30 days on a right-of-way donated by the Santa Fe Railroad.

Jet Engine Fails Its Test As Snow-Removal Device

A jet engine proved to be unsatisfactory for snow removal in a May 15 test in California's Sierra Nevada Mountains.

The test used a truck mounted Allison J-35 jet engine loaned for the occasion by the Los Angeles Turf Club, Inc., which uses the rig to dry out Santa Anita race track. Road Commissioner

Fred P. Carner of Mono County hoped that the machine would help solve one of his toughest problems—that of removing a winter snow pack from county roads.

The test was run on 15 ft of hard packed snow in the Mammoth Lakes area, about 40 miles north of Bishop, Calif. A bulldozer broke up the pack. The snow then was subjected to the jet blast. With the thrust as high as it would go without moving the truck, only a few snow particles were picked up and blown away. At this high thrust, the blast was too cool to melt the snow.

Maximum heat is produced by the jet at about 40% power. This succeeded in melting the top layer of snow. But the melt froze again, leaving a tougher ice crust.

The jet engine device has proven so successful in drying the race track that Santa Anita officials have ordered a second unit. But apparently snow removal is not going to succumb to the jet age—at least not with present equipment.

Stop Sign Below Light Cuts Accident Rate

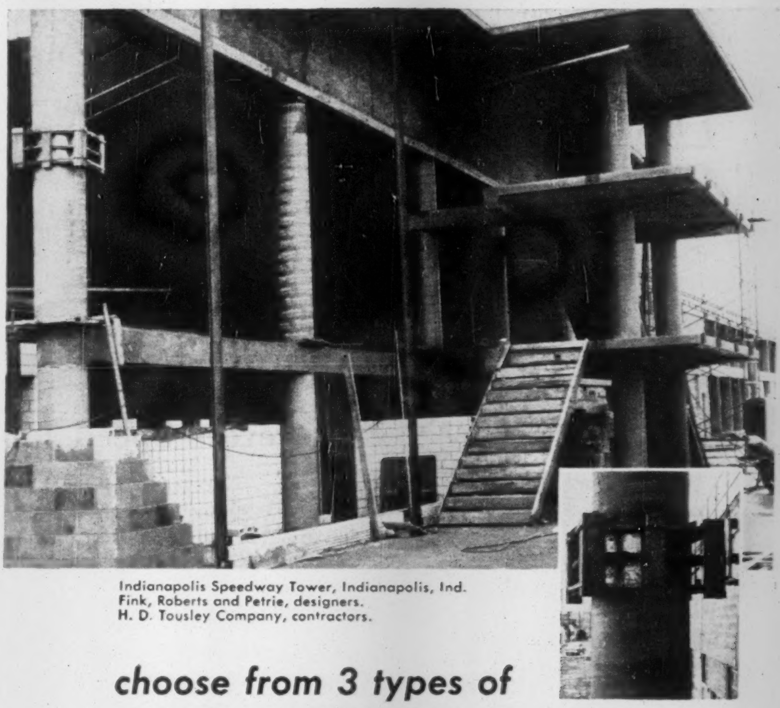
Hanging a self-illuminating stop sign below a flashing red light at a road intersection in Macomb County, Mich., cut accident tolls in half and reduced the injury rate by nearly 80%.

Before the new stop sign—developed by the Michigan State Highway Department—was moved to the signal light itself, traffic was controlled by the conventional amber flasher for one road and red flasher for the other, complemented by shoulder signs indicating a compulsory stop for the red flasher.

(*Field and Office continued on page 66*)

Form round concrete columns

the fast, low-cost way!



Indianapolis Speedway Tower, Indianapolis, Ind.
Fink, Roberts and Petrie, designers.
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choose from 3 types of

SONOCO
***Sonotube*®**
FIBRE FORMS

Whenever there's a round concrete column to be formed . . . there's a Sonotube Fibre Form to do the job . . . faster and more economically than any other way!

Take your choice of Sonoco's three types:

1) Seamless Sonotube (pat. applied for)—A premium form specifically developed for use where smoother column surfaces are desired.
2) "A" Coated Sonotube (patented)—The standard form for exposed columns.
3) "W" Coated Sonotube — For unexposed or exposed columns where finishing is not required.

All three come in sizes from 2" to 48" I.D. Standard shipping lengths 18 feet. Available up to 48 feet long. Order in desired lengths or saw to your requirements on the job.

Choose and use a Sonoco Sonotube Fibre Form on your next job!

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Surveyors Speed Job With Helicopter

A West Virginia surveying crew slashed weeks off its highway location job time by using an electronic tellurometer to measure distances and a three-passenger Bell helicopter to ferry crewmen between points. Air Survey Corp., Arlington, Va., who did the aerial photography and photogrammetry for consulting engineer, J. E. Greiner of Baltimore, said it accomplished this work in one-tenth the time that traditional methods would have taken.

The "air lift" operation took place along a 90 mile stretch of a proposed interstate highway, the assignment being to establish second order traverse stations every few miles along centerline, running them in from Coast and Geodetic Survey stations some 20 miles apart and slightly off the proposed route.

Since the completion schedule called for extremely rapid work at a time when weather was foggy and wet and in terrain that was rough, hilly and timbered, Air Survey Corp. decided to use a telurometer to eliminate tedious chaining up and down slopes and setting numerous triangulation points.

To complete the speedup, Air Survey decided to charter a helicopter to ferry crew members with their instruments from one hilltop to another. While the tellurometer has been used for highway work before, Bureau of Public Roads officials believe this is the first time a helicopter has been used in the U. S. for highway location work.

Accuracies obtained were satisfactory, final closure on the first 12 mile section being 1:35,000.

In average weather, the field engineers found that the four-man crew could establish points at the rate of one per hour. Setting up and dismantling the tellurometer consumed about 15 minutes, and taking the distance readings, some 20 minutes.

The helicopter, a Bell H47, carried two surveyors plus the pilot. The plane averaged 50 short hops a day to move men and equipment from point to point. Many flights (that often took the place of an hour's hard climbing) were only of two or three minutes duration.

Party members kept in touch with each other and the helicopter by a two-way radio. And the tellurometer, which is equipped with its own radio phones, was used not only for operating that device but for directing each other as they turned the angles.

Vacuum Pump Recovers Oil Spilled on Water

According to the Rhode Island division of sanitary engineering, a vacuum tank truck ordinarily used to clean sumps and pipelines in oil terminals has proved "highly effective" in recovering oil spilled in harbors.

The equipment, manufactured by Thompson Tank & Manufacturing Co. of Long Beach, Calif., was first used recently when a discharge hose from a tanker ruptured, dumping a large quantity of crude oil. The tank truck dropped a 4 in. suction hose and scooped up the spill faster and easier than by the old manual ladling method. The hose was provided with a steam jet at the open end to improve oil flow.

The tank capacity is 1,800 gal and can exert a vacuum of up to 27 in.—sufficient to lift oil up to 17 ft. To discharge, the pump is run in reverse.

WHEN A CONTRACTOR NEEDS A SIGN...
MIRO-FLEX
HAS IT!!

PLEASE
DRIVE CAREFULLY
NEXT 15 MILES
RESURFACING
PAYNE AND DOLAN CO.
CAUTION
PROJECT BEGINS
BRODERICK & GIBBONS INC.
ROAD UNDER CONSTRUCTION TRAVEL AT YOUR OWN RISK
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CUSTOM MADE OR STANDARD MODELS

Miro-Flex furnishes hundreds of contractors with custom signs for specific projects and standard signs used on virtually all jobs. You'll like the quality and the way Miro-Flex follows your specifications. Has complete facilities for helping you design your signs to follow state regulations.

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A set of Miro-Flares, the original reflecting flare, is a must for every truck and construction job. Reflects "warning" for one-half mile in both directions. No batteries, fuses, etc. ICC authorized.

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New Concept in Construction Fastening!

REMINGTON

Power-Mate* BASIC UNIT

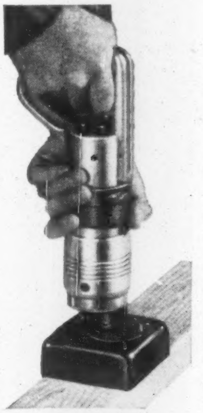
. . . plus choice of 4 interchangeable Stud Driver Kits

K-1. CAPTIVE STUD KIT—designed to prevent free flight of studs when base material is inadequate. Used with "Power-Mate," this is safest Stud Driver ever designed.

K-2. LIGHT-DUTY KIT—produces all-purpose tool. Handles 80% of your fastening in concrete or steel. K-1 and K-2 use ¼" diameter Remington Studs and 22 caliber Power Loads.

K-3. MEDIUM-DUTY KIT permits use of ⅜" diameter Remington Studs with low-cost 22 caliber Power Loads. This assembly gives top performance . . . economically.

K-4. MEDIUM- AND HEAVY-DUTY KIT for toughest fastening jobs. Designed for use with ⅜" diameter Remington Studs and scientifically graded 22 or 32 caliber Power Loads.



Most versatile tool ever designed for fastening wood or metal to concrete or steel

Now you can have the power you want, the stud size you need with the new Remington "Power-Mate." The tool is easy to use. Just a squeeze of the trigger is all it takes to anchor wood or metal sections to concrete or steel: No pre-drilling, no outside power connections required!

The Remington "Power-Mate" is flexible, too. Permits use of ¼" or ⅜" diameter alloy steel studs and 22 or 32 caliber Remington Power Loads to furnish driving force.

Take the "Power-Mate" Basic Unit, attach the Stud Driver Kit of your choice—and the tool is ready to use! It will handle any fastening job—light, medium or heavy duty. That's why the Remington Stud Driver is the most versatile construction fastening tool ever designed!

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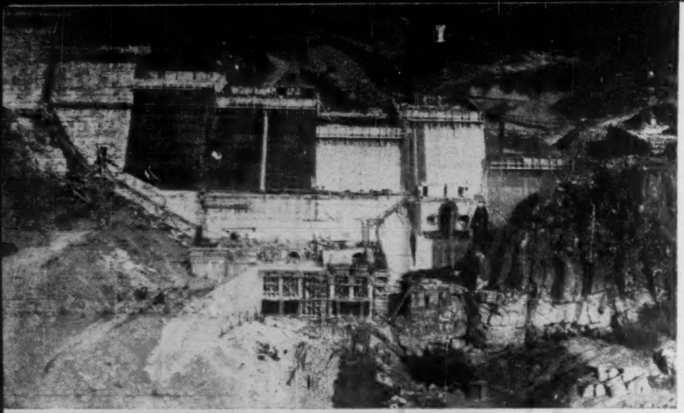
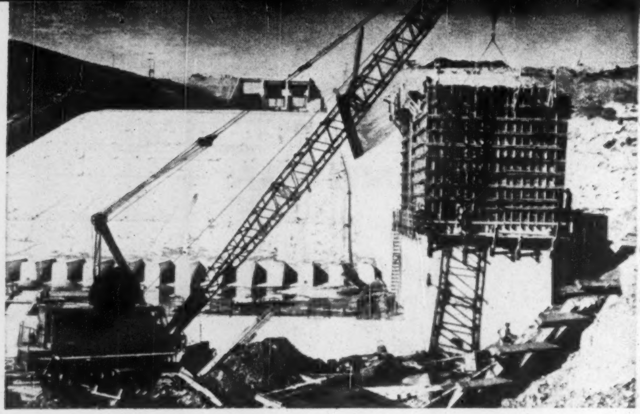


TEXACO PLAN was used from the start in construction of the Tiber Dam on Montana's Marius River. Dam is 205 feet high and 4,300 feet long.



TIME AND CONFUSION SAVED by Texaco Plan kept maintenance costs low during construction of Tulloch Dam in California.

These 5 great American construction projects use
Texaco Simplified Lubrication Plan

These five projects represent hundreds of millions of dollars in construction costs. When you hit these figures, lubrication can be an especially big item. But on any size job, it's not the cost of the lubricants themselves but the difference between *planned* and haphazard lubrication methods that counts. The latter can cause unexpected breakdowns, costly overtime, and ruined equipment. But planned lubrication can speed project completion, minimize downtime, lengthen equipment life. That's why cost-conscious contractors are turning to Texaco's Simplified Lubrication Plan.

TEXACO PLAN SAVED THOUSANDS OF DOLLARS on these jobs. And it can do the same for you. It cuts the number of lubricants you need for all your major lubrication down to no more than six, and it helps you set up an efficient lubricating system for all your equipment. Furthermore, your Texaco Lubrication Engineer will gear the Texaco Plan to your particular requirements.

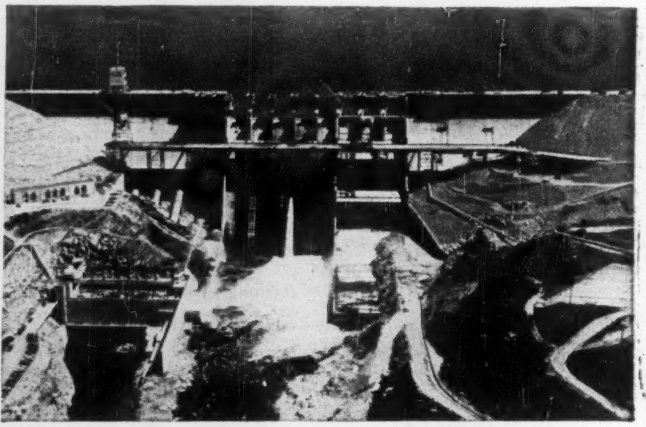
GET THE WHOLE STORY. Contact your nearest Texaco Lubrication Engineer *soon*. He can show you how much the Texaco Simplified Lubrication Plan has saved contractors in the past—how it can help you in the future. Just call the nearest of more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO
REG. T. M.
IN ALL
48 STATES

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

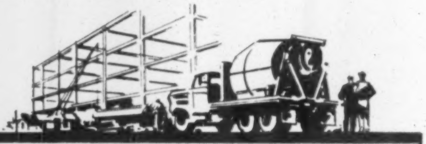
WELL AHEAD OF SCHEDULE, Columbia River's Priest Rapids Dam is already more than one-third complete. Texaco lubricants are used exclusively.

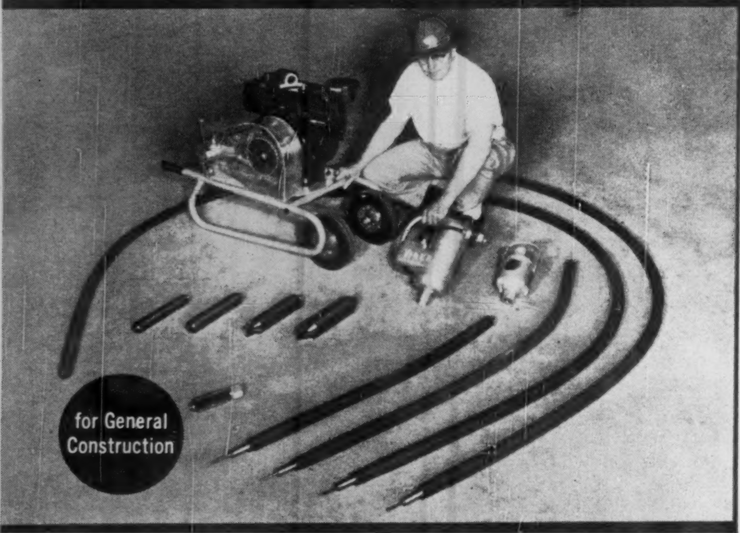


WORLD'S LARGEST earthfill and concrete project, Folsom Dam on the American River, used the Texaco Simplified Lubrication Plan from start to finish.

HUNGRY HORSE DAM, MONTANA. TEXACO PLAN PLAYED VITAL PART IN ON-TIME PROJECT COMPLETION.

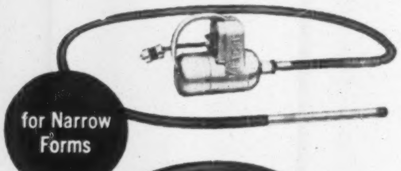
Only Viber makes a complete line of *Concrete Vibrators* for Contractors!

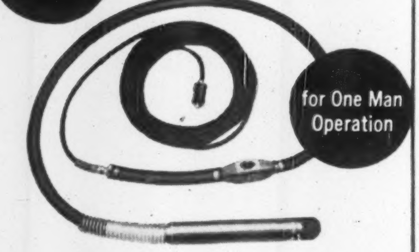


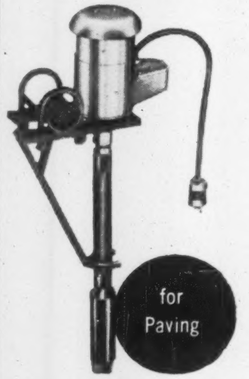


for Pre-stressed Concrete

for Laboratory or Field







for Mass Concrete

67 combinations are possible with just 12 basic models of Viber Vibrators. Combinations that will lower your original investment, help you keep operating costs down and hold maintenance expense to a minimum.

Standardized units of each model permit easy adaptability to meet varying job conditions.

An exclusive Viber feature is the standard replaceable rubber tip that eliminates gouging or scarring of form faces and the expense of grinding or hand finishing of blemishes caused by marred forms.

Viber Vibrators are of simple design and rugged construction. Those parts which may need attention are readily accessible to simplify servicing and reduce labor expense.

Because Viber Company manufactures concrete vibrators exclusively, their design and manufacturing skill is concentrated entirely on producing only the best and most dependable vibrators.

High speed—low amplitude vibrators pioneered by Viber Company, are your assurance of getting fast, efficient, dependable concrete compaction on every job. *Get the facts now!*

Contact your dealer or write direct for detailed information.
Viber Company, 726 South Flower Street,
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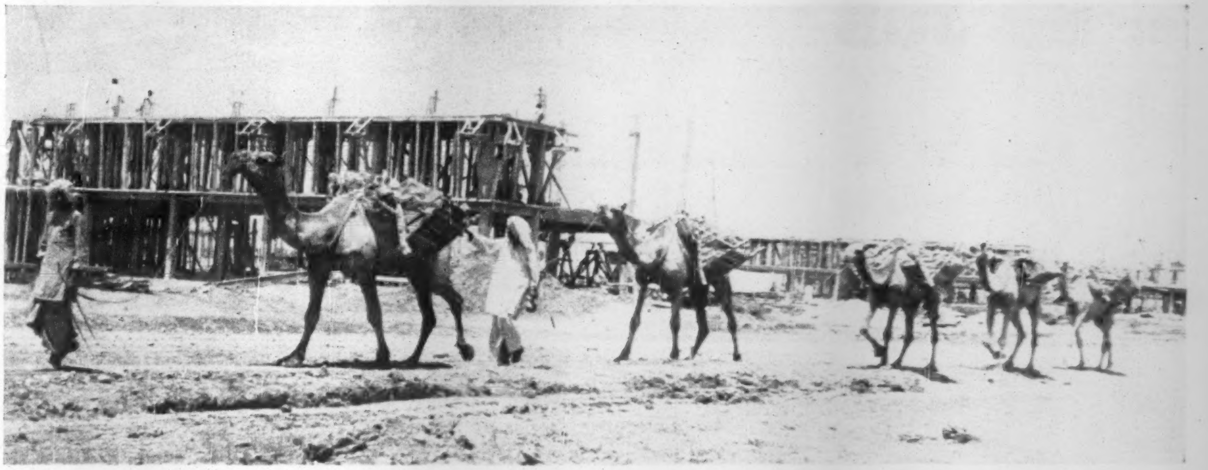
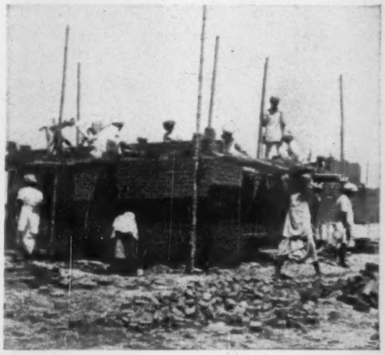


CAMELS MOVE BRICK from job site kilns to building sites on Pakistan cantonment job. Buildings are two-story concrete frames.

Goatskins and Ox-carts on Big Job

PRIMITIVE METHODS, BUT A $50 MILLION JOB:

Hand-carried boxes for excavation . . .



Bamboo scaffolds for bricklaying . . .

Ox-cart transport for reinforcing steel . . .

Goatskin water bags for mortar curing.

In the shadow of the Himalayas, the U.S. Army Engineer Corps is supervising an operation that is turning a vast area of ancient farmland in Kharian, West Pakistan, into a modern 16,000-man armored-division cantonment for the Pakistani Army.

With cheap labor, a maximum of local materials and methods as primitive as those used in Biblical times, contractors are placing high-quality construction at the rate of $1.5 million per month.

Cost of the project—to be completed in 1960—will be $50 million, said to be about half the price of a similar installation in the U.S.

Construction of the cantonment is being paid for by the U. S. as part of its military aid to Pakistan. The project was drawn up by the American Military Assistance Advisory Group and the Pakistan Army. Construction supervision is provided by Dumont-Greer Associates, architects-engineers—a Franco-American firm with offices in Paris, Geneva and Teheran, which has supplied 32 architects and engineers under a lump-sum contract.

In a searing 120 deg. summer temperature, Pakistani men dressed in skirts are using the same construction methods as their ancestors used. All excavation is done by hand and hauled away in saddlebags on donkeys. Aggregates are transported to the project on camels' backs. Bricks and all other building materials are moved about by donkeys, camels and bullock carts. As a small gesture to the Twentieth Century, the

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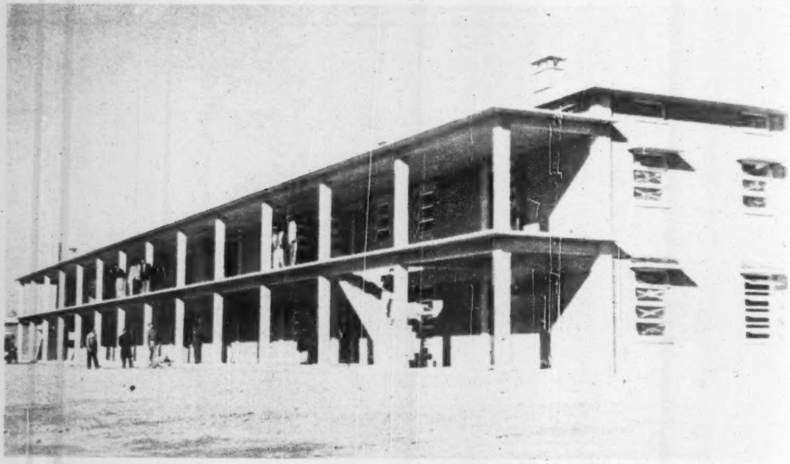


TYPE OF BUILDING which primitive methods produce for Pakistan Army. The frames are concrete and the walls are of brick. Cost is about $100,000.

carts are all equipped with pneumatic tires.

All brick—and 50 million will be required—are made on the site, as are all bolts, nuts, rivets, etc. Threads are hammered into the nuts and bolts. Roofing tiles are turned out six a minute in primitive hand presses. Concrete mixers are used, but hand placing with gallon size pans is the rule. All hoisting is done by hand with block and tackle. Ladders and scaffolding are made of bamboo.

Construction water is brought up from shallow Persian wells by a crude bucket-chain pump powered by an ox walking in a small circle. The water is then carried to all points of the project by gravity flow in small mortar-lined brick flumes.

When concrete is to be placed below grade, the forms are made of brick. Concrete curing is carried on by several hundred workers, each equipped with a goatskin water bag and a small cup for sprinkling.

But in spite of primitive building methods, more than $11 million of construction has been completed in the first year. No cracks have appeared in the concrete, and the hand-threaded nuts and bolts fit. Furthermore, cost of construction is low—less than $100,000 for a modern, 126-man, two-story barracks of reinforced concrete and brick.

When finished the project will consist of about 490 buildings, including a modern, 200-bed hospital, 31 miles of roads, 10 acres of paved parking areas, 7 miles of paved ditches, 1.6 miles of culverts, 18 miles of water lines, 13 miles of sewer lines, 3 miles of railroad and the usual support facilities.

All brick exterior walls are of cavity-type. Roofs are insulated with six inches of foam concrete. Heating is by fireplaces, and hot water is provided in bathrooms. Static water tanks for use by pumper trucks provide fire protection.

• **Administration**—The project is under the direction of Col. Robert E. Snetzer, Corps of Engineers, U.S. Army, who acts as area engineer. Supporting Colonel Snetzer are the 32 architects and engineers, of seven nationalities, furnished by Dumont-Greer Associates, who are headed by W. H. Boutwell, resident partner-in-charge. Mr. Boutwell, an American engineer with 30 years' experience in eight countries, also acts as chief of construction in the area organization.

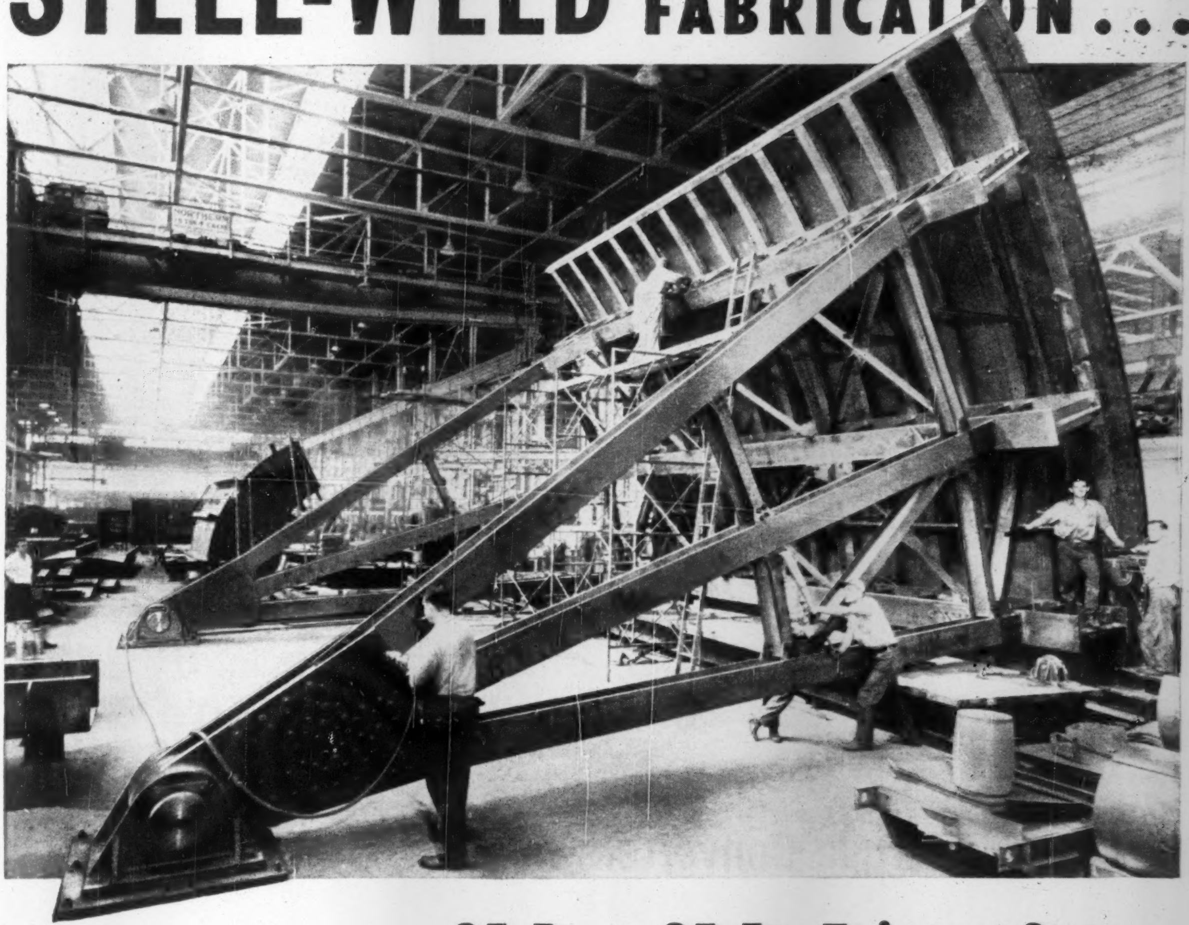
Organizational set-up on the project is unusual. Although Dumont-Greer Associates has a lump-sum contract for construction supervision, a separate architect-engineer organization does not exist in the area office. All positions normally found in an area office, except that of area engineer and his civilian engineer assistant, are filled by Dumont-Greer employees who, as stated, comprise the engineering staff.

Prime contractor on the job is Oman-Farnsworth-Wright, an American joint venture headed by J. Rodney Mims as project manager. Subcontractors are Gammon (Pakistan) Ltd. for buildings; Contracting and Trading Co., of Beirut, for underground utilities and plumbing; and General Electric Co. of Pakistan for electrical installations.

More than 9,000 people are employed on the project. All but 80, including the area staff, are native Pakistanis.

(*International continued on page 74*)

STEEL-WELD FABRICATION . . .



35 Ft. x 25 Ft. Tainter Gate

for a Flood Control Dam at Waterbury, Vermont

The heavy steel Tainter Gate shown above was fabricated and machined by Mahon . . . it was then completely assembled and checked in the shop before shipment to the dam site.

When you require fabricated steel components for Locks or Dams, Highway or Power Projects, you will find in the Mahon Company a unique source for heavy steel plate components and steel framed structures in either welded or riveted construction . . . a fully responsible source with a long and enviable performance record, and unusual facilities for fabricating, machining, field assembling and erection.

See Sweet's Product Design File for information, or have a Mahon sales engineer call and tell you about Mahon Service in this field.

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on direct-connected motor powered equipment with high starting torque, the motor must be sized B I G for starting instead of small for running. this makes you buy more motor than you really need or use a wound-rotor type more expensive than you want. a better way is to use the small motor and drive through a National Torque Converter this "tailors" the power to the need, multiplies maximum motor torque up to three times x(10 X 3 1(10 for starting, boosts torque instantly when overloads occur, bans motor stall and increases equipment life.

National Torque Converters help smaller motors do a bigger job

Heavy, electric-powered equipment operating on an intermittent, on-off-on-off work cycle gives motor drives a mighty tough time—unless it drives through a National Torque Converter. The converter multiplies starting torque so that a standard motor, sized to take care of the equipment's *running* needs, can supply the extra push needed for starting. Added loads imposed by multiple operations are smoothly cushioned. Shocks and strains, so hard on equipment, are absorbed. The extra cost of a special motor, and the extra day-to-day expense of operating an over-sized power plant are both eliminated.

If you are concerned with manufacture or operation of any heavy equipment where electric drives of from 100 to 1000 hp are used, the National line of Torque Converters will provide you with a unit precisely "mated" to load and application. For details write:

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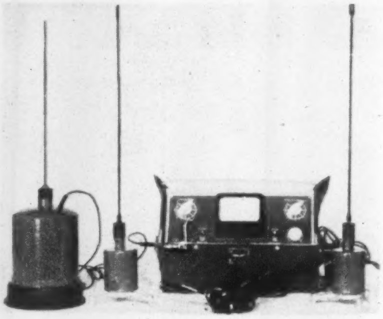


Electronic Devices Help Water Line Maintenance

Two new electronic instruments for waterworks engineers to locate leaks in water mains and the mains themselves are being marketed in Western Germany. According to the manufacturer, the action-radius is large enough to allow an extensive network of pipes and mains to be checked from selected points along its length.

The Hydralux, pictured above, is claimed to be sensitive enough to locate pipe leaks of as little as 3½ pints per minute. The pressure in the pipe must, however, be at least 18 psi to permit accurate operation. It is said the locating device which utilizes high frequency wavelengths, is not affected by street traffic or inclement weather.

The smaller unit, the Ferrolux, also requires no direct connection to the pipe network nor needs to be plugged into a source of electric power. According to its builder, both position and depth of the lost pipe is recorded for iron or non-ferrous lines laid to depths of 16 ft. This unit also can be used to locate underground cables.

Both devices are made by Dynacord K. G., Landau Isar, Germany.

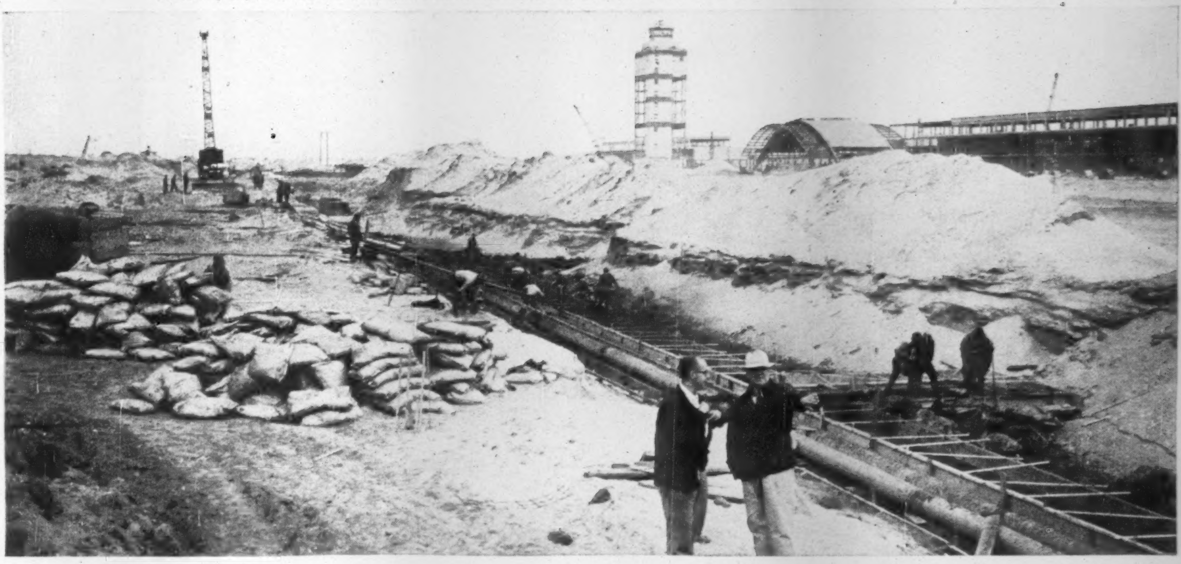
Italy Gets $75 Million Loan From World Bank

An Italian governmental agency has received a $75 million loan for the development of industrial, power and irrigation projects in southern Italy. The lenders are the International Bank for Reconstruction & Development and 22 other American, German and Canadian banking houses.

The Italian agency, Cassa per il Mezzogiorno, has allocated $29.4 million for industiral projects, $29.2 million for electric power (the money to be re-loaned to utilities) and $16.4 million for irrigation.

The industrial money will go for development of potash deposits in Sicily and tinplate, refrigerator and clothing factories on the mainland.

Consulting Engineers: Seelye, Stevenson, Value & Knecht. Heating Contractors: Almirall & Co., Inc. and Norman Heating Co., Inc.; Eugene J. Brandt & Co., Inc.



LARGE TRENCH AT IDLEWILD shows one expansion loop in foreground and another in background. Note large pipes for chilled water lines running outside of the walled trench containing the high temperature hot water system. The control tower is in the center of the photograph, and the new International Arrival Building is at the right of the tower. The bags of GILSULATE are slid down boards into the trench.

$90,000,000 Idlewild expansion program uses 1515 tons of GILSULATE to protect 7 miles of pipe

New York International Airport Has One of World's Largest High Temperature Hot Water Systems

By 1960 "Terminal City" will be a completed reality at New York International Airport. This gigantic undertaking comprises 655 acres and will be equipped to handle 140 aircraft at one time. Estimated cost of the project is $90,000,000.

Running from a central heating plant to each of the projected buildings in Terminal City is one of the world's largest non-military high temperature hot water systems ever designed. This system, operating at 380°F on the supply and 240°F on the return lines, includes 38,774 feet of pipe (7.34 miles!), virtually all of which is protected with 1515 tons of Type B GILSULATE. In this gigantic system, expansion loops alone total almost one mile!

Big job or small job, GILSULATE offers the same unique protection for underground hot pipes—and the same opportunity for on-the-job savings. GILSULATE is easy to install; it calls for no trained fitters or applicators, no special installing equipment. So whether *your* piping job is large or small, you'll find that GILSULATE fits right into your specification picture—at a lower cost per installed linear foot than any other underground hot pipe insulation.

For more complete information, see your local GILSULATE distributor, or write any of our offices listed below.

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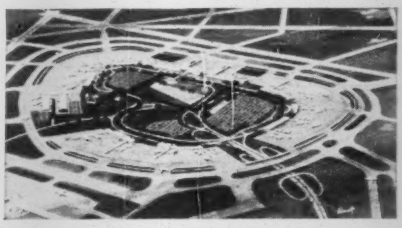


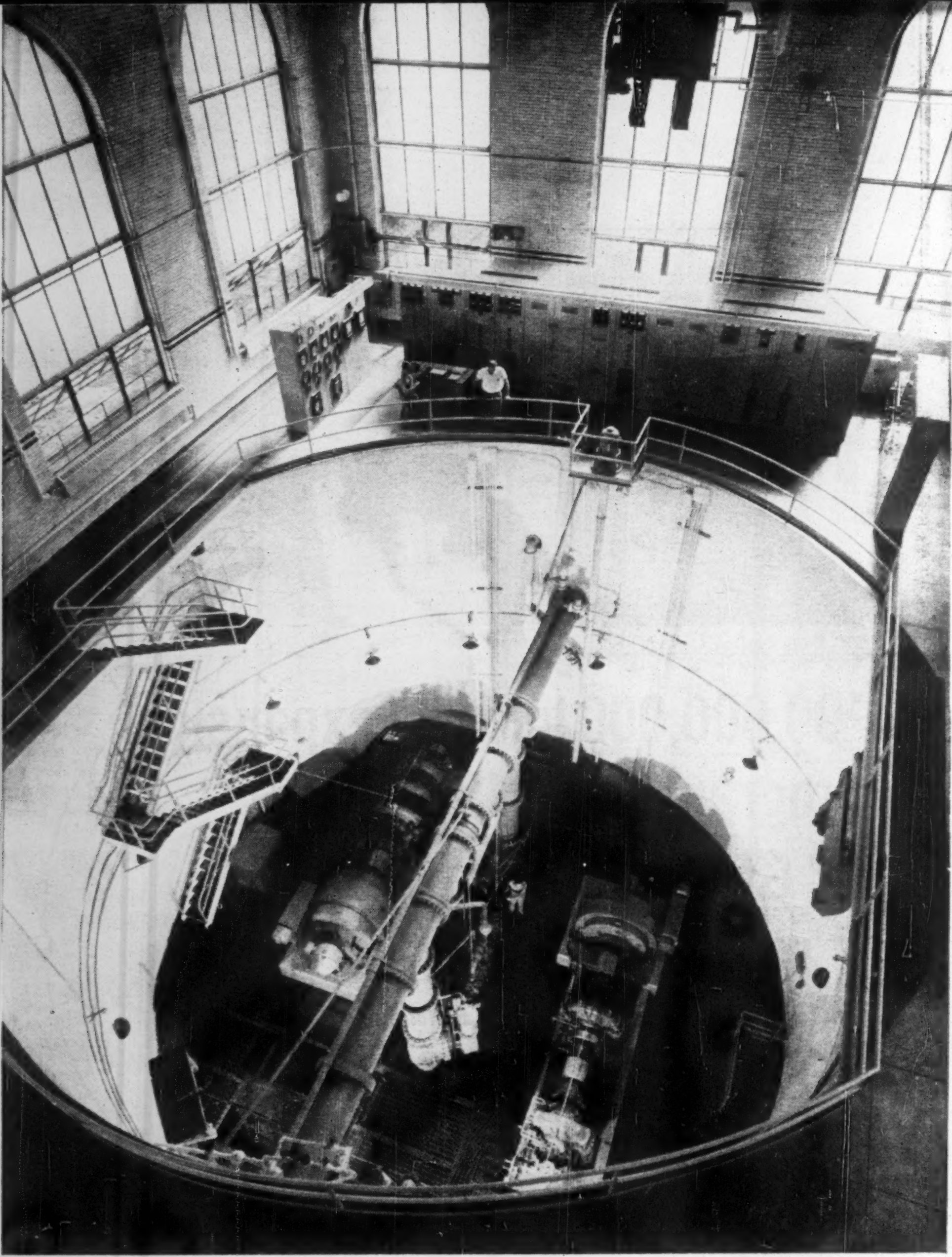
Artist's sketch of Terminal City showing proposed buildings and extent of high temperature hot water system.

FACTS ABOUT GILSULATE

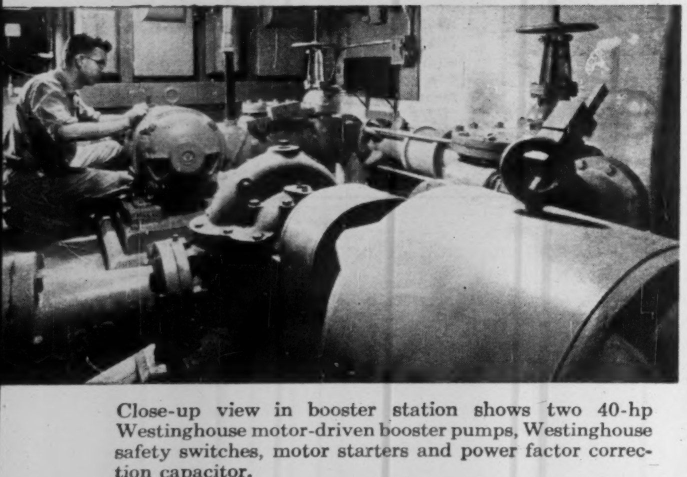
1. **EASY TO USE**—just pour and tamp...pipe heat does the rest.
2. **FORMS 3 ZONES** of protection against heat loss and all hazards commonly encountered by buried hot pipes.
3. **NEEDS NO HOUSING OR MECHANICAL SHEATHS:** no mixing, special handling or equipment.
4. **ONLY NEEDS NORMAL PIPE SPACING:** for multiple pipe or cramped conditions.
5. **THREE TYPES AVAILABLE:**
   Type A for 220°-300°F. temp. range
   Type B for 300°-385°F. temp. range
   Type C for 385°-520°F. temp. range

GILSULATE®

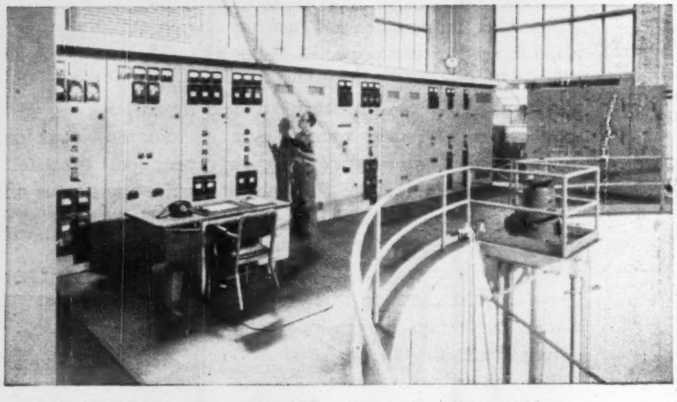
The Triple-Zone Insulation System for Lifetime Protection of Underground Hot Pipes



View at Nadine Pumping Station shows south pump pit containing pumps No. 2 and No. 3 with Westinghouse metal-clad switchgear and control center for all station pump motors in background.



Close-up view in booster station shows two 40-hp Westinghouse motor-driven booster pumps, Westinghouse safety switches, motor starters and power factor correction capacitor.



Metal-clad switchgear includes: incoming line section; starting breakers for 1000- and 1250-hp synchronous motors and their auxiliary field control cubicles; starting and running breakers and reactors for two 2500-hp motors.

Water pumping station saves $66,500 annually by Powering-Up electrically

The need for extensive modernization and expansion of water pumping facilities at Nadine Pumping Station of The Wilkinsburg-Penn Joint Water Authority brought about a complete change from steam to electric motor-driven pumps. One new 6.5-mgd pump was added to the three already in use to increase total capacity to 52,000,000 gallons per day.

In addition to the benefits of increased capacity and complete station electrification, comparative figures show a reduction in annual operating costs from approximately $268,000 to $201,500, for a savings of $66,500 per year. This represents an annual return of about 19% on the modernization cost of approximately $350,000. This fast five-year amortization of the investment eliminated the necessity of bond issues or other financing.

Besides the four new pump motors supplied by Westinghouse, the station now contains a line-up of 5-kv metal-clad switchgear, a 150-kva dry-type power center transformer, a motor control center for auxiliary power and a station battery and automatic battery charger.

The electrical Powering-Up of this pumping station has also made possible a more flexible discharge piping arrangement and the electric operation of valves and other equipment.

Powering-Up electrically can mean similar important benefits and savings for you. For further information, call the Westinghouse electrical construction engineer nearest you. He can help you in your Power-Up program. Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa.

Owner: The Wilkinsburg-Penn Joint Water Authority
Consulting Engineers: Morris Knowles, Incorporated
General Contractors: Dravo Corporation
Electrical Contractor: Morganstern Electric Co., Incorporated

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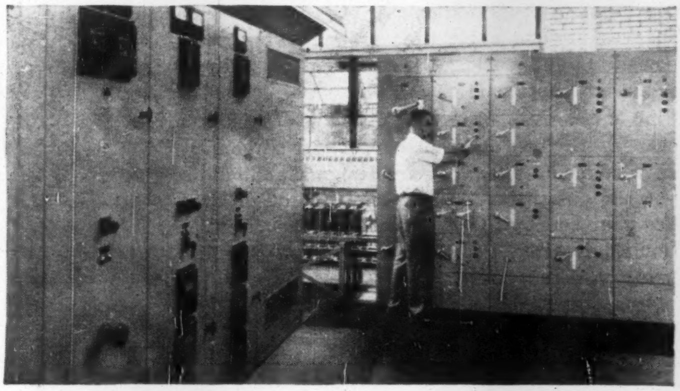
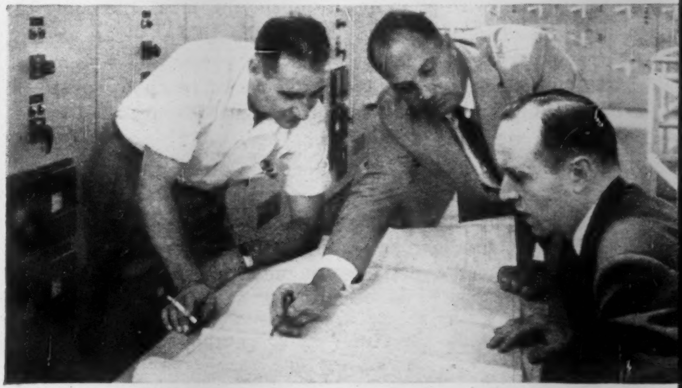


Shown at left is metal-clad switchgear feeder cubicle and 150-kva dry-type transformer. Motor control center at right contains motor starters and feeder breakers for various station auxiliaries.



Engineering group shown includes: George A. Maibach, Chief Engineer, Nadine Pumping Station; G. V. Gustafson, Morris Knowles, Inc., Consulting Engineers; M. B. Trimble, Westinghouse Construction Sales Engineer.

LIMA Type 44 Pullshovel, owned by S. A. Reubel & Co., trenching near Cincinnati, Ohio.

"An extremely rugged machine...plenty of reach for deep trenching" —*says S. A. Reubel & Co.*

Back in September, 1956, S. A. Reubel & Co., of Cincinnati, Ohio, bought a LIMA Type 44 Pullshovel to do the heavy digging on its pipelaying jobs. The company tells us: "We have found the LIMA 44 an extremely rugged machine, with the power and weight to do a fine, fast job. It has plenty of reach for deep trenching and is very easy to handle. We are glad to have it working on our team."

Contractors like S. A. Reubel & Co. appreciate the speed, reliability and extra capacity of LIMAS. Here are some of the reasons these machines offer more: All gears, smaller parts and shafts that are subjected to extra wear are flame or induction hardened for longer life; long, wide crawlers for maximum stability; anti-friction bearings are used at all critical bearing points; large diameter big-capacity drums and sheaves prolong cable life; propel, swing gears, and power take-off enclosed in a sealed oil bath; torque converter (optional).

Find out more about the complete line of LIMA shovels, cranes, draglines and pullshovels with wagon, truck or crawler-mountings. They are designed and built to give you the power and stamina that pay off on every job. See your nearby LIMA distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

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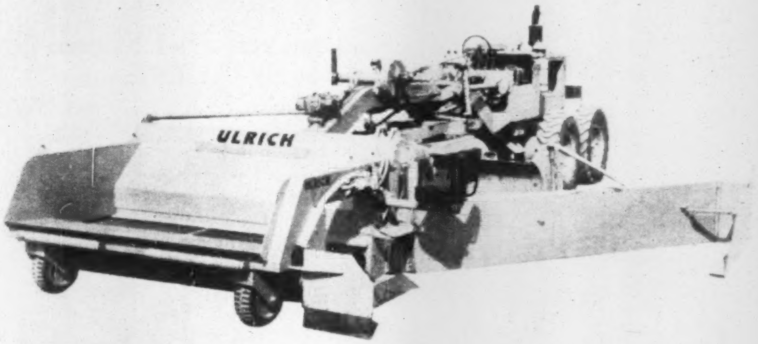
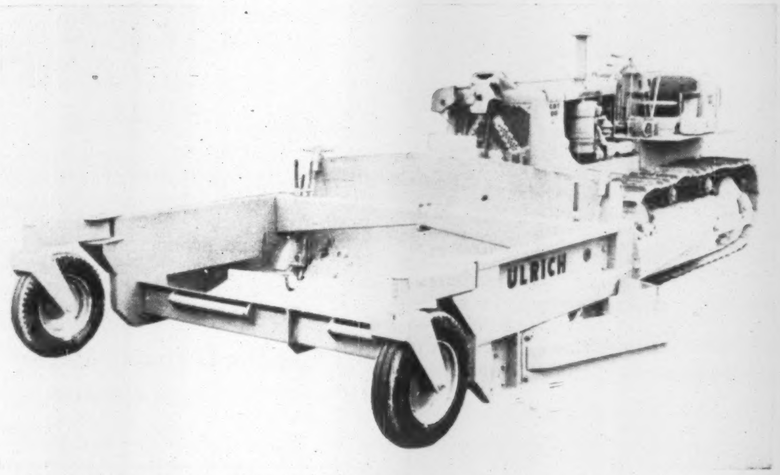


TRENCH FILLER SHOULDER SPREADER has adjustable angling strike-off blade.



BASE AND AGGREGATE SPREADER strikes off with dozer blade.

Dozer Blades Speed Spreading

A machine designed specifically for filling road widening trenches and spreading shoulder material is available. Designed for the Caterpillar motor grader and designated the T-CO, the model is equipped with an angling strike-off blade adjusted to spread from one to ten feet in width. The long wheel base of the grader provides necessary stability to overcome side drift caused by the extra length strike-off blade.

The strike-off blade can be set at any point, 16 in. below or 8 in. above the pavement, with spreading depth being independently controlled on both ends of the strike-off.

As trucks dump their loads, the spreader's dump apron can be raised or lowered hydraulically to match the height of the truck. The apron also raises to dump palings onto the belt, which is powered by a hydraulic motor and gear reduction unit with variable belt speed.

The operator has an unobstructed view of the truck, conveyor and strike-off area, say the manufacturers. The working width on a roadway is only 10 ft, so that traffic can continue in one lane during its operation.

Another tool at hand takes the form of an aggregate spreader that uses its dozer blades to strike-off. Known as the S-16 Dozer-Spreader, the equipment can be installed on many Caterpillar track-type tractors that have either a straight or angling bulldozer without any changes in the tractor.

The manufacturers claim the S-16 can spread gravel, stone, sand and asphaltic mixes. Spreading widths of from 10 to 16 ft are possible with hinged wings on each side of the hopper. Spreading depths can be adjusted from 1 to 20 in. by two large adjustment wheels. The proper match of spreads can be assured by varying the operating position of the spreader's wheels. Dozer controls will lift the spreader to transport position, using either cable or hydraulic controls. Ulrich Mfg. Co., Roanoke, Ill.

Small Chlorinator Offers Accurate Flow Control

Fischer & Porter has introduced a 100 lb per day panel-mounted chlorinator designed to permit accurate control of chlorination in small installations. Known as Model 70C1610, it is a manually operated, solution feed, vacuum type unit. The flow rate is maintained constant by spring-opposed, diaphragm regulators that are said to be accurate within 4%.

The unit operates over a flow range of 10 to 1. Standard meters are available with maximum capacities of 10, 25, 50 and 100 ppd.

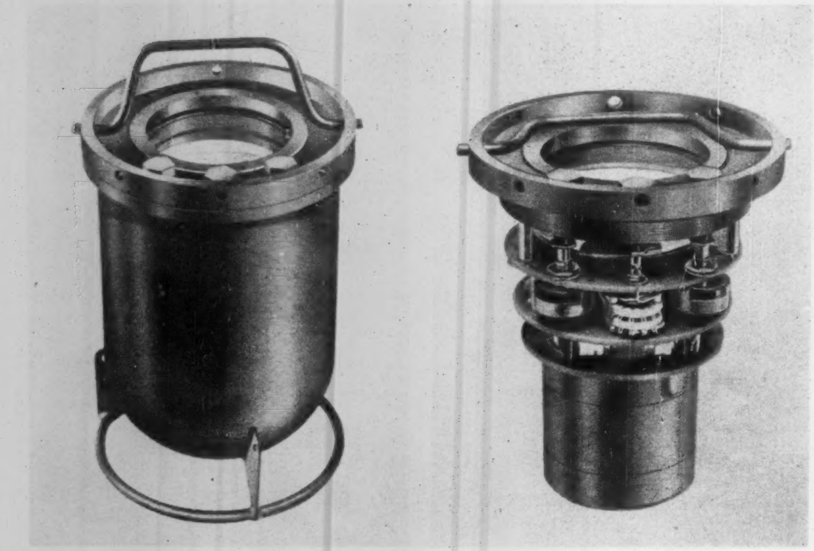
The chlorinator is constructed of plastic materials that are said to be resistant to the corrosive action of dry and moist chlorine gas and chlorine solution. Fischer & Porter Co., Hatboro, Pa.

Two New Concrete Forms Are of Textured Plywood

Two new field-tested concrete forms have been announced by U. S. Plywood Corp. One—Formtex—is faced with an unusual texture of deep, irregularly spaced grooves. Eliminating the need for expensive sack and rub treatments, according to the maker, it reportedly allows savings of up to 10 cents per sq ft in finishing. Exterior Formtex will give up to 13 re-uses, it is reported.

The other new textured surface is Weldwood Surf-Form. This is a low cost panel with a contoured face. The pattern is produced at the mill by removing some of the soft grain growth. This process emphasizes the natural swirls and contours of the face fir veneer. The manufacturer says that the pattern is particularly useful for decorative building fronts and for low cost interiors requiring a minimum of upkeep. Eight to ten re-uses are reported for the Surf-Form panels. United States Plywood Corp., 55 W. 44 St., New York 36, N. Y.

(*New Products continued on page 80*)



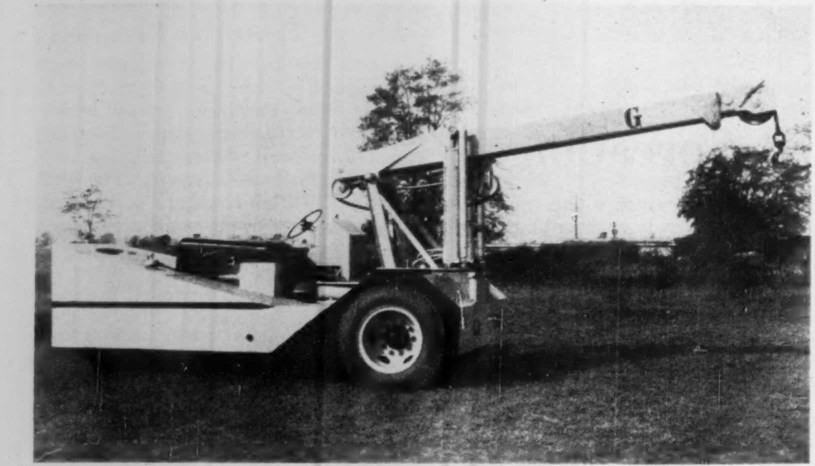
Gamma Meter Checks Underwater Radioactivity

A portable submergeable gamma radiation survey meter designated as the Riggs UW-1 now is available for general underwater survey work. The 8¾ lb, battery powered (mercury) instrument is adaptable to radioactivity survey work in underwater salvage operation, demolition and nuclear waste disposal checkout for radioactivity.

All components are housed in a rugged stainless steel case 6 in. in diameter and 10 in. high, that may be submerged to depths of 300 ft for a 24 hour period.

Hand grips and combination stand and grasp ring base also are provided as part of the outer case.

The meter scale has 3 in. arc lengths of three log divisions with a reading range of from .01 mR/hr to 1,000 R/hr. Riggs Nucleonics Corp., 717 N. Victory Blvd., Burbank, Calif.



Materials Handler Comes in Four Sizes

A neat hydraulic materials handler is put out by Grove in 5, 8, 10 and 12 ton capacities. It is capable of 140 deg slue, with 270 deg optional. Booms for the 5, 8 and 10 ton models come in two and three sections, and telescope from 8 to 24 ft from bumper and hook height to 32 ft.

Prime mover is a 6-cylinder gasoline engine, with diesel optional. A variety of boom attachments for special jobs is available. Grove Manufacturing Co., Box 21, Shady Grove, Pa.

Improved Fuel System Adds to Cat Efficiency

A new series of DW-20 and DW-21 wheel tractors equipped with Super Turbo engines that are said by the manufacturer to give greater power and operating efficiency is on the market.

The wheel tractors have been designed to provide a maximum horsepower output of 320 hp, with significantly improved torque and rise characteristics. These improvements combine to give the new machines advantages of increased lugging ability and higher travel speeds.

One of the prime factors in the design is the new concept in diesel engineering turbo-charging. Engineers have incorporated an improved air-induction system with the intention of improving on the fuel combustion efficiency and power output of the engines.

In addition to the new air-induction system, many engine components have undergone design changes. Included are new pistons, stronger piston pins, push rods, rocker arms, camshafts, a newly designed cylinder and block, introduction of new bearings and the addition of a primary fuel filter. Caterpillar Tractor Co., Peoria, Ill.

Streamlined Truck Mixer Introduces New Features

A new truck mixer, the 1958 Challenge, features a new water-tank location to give the driver better vision to the rear. Also, a recessed control panel is well protected and carries complete operating instructions. The driver controls the mixer from a single lever either at the rear or in the truck cab. An automatic wash-down system helps keep the discharge assembly clean, says the manufacturers. Cook Bros. Equipment Co., distributors for Challenge Manufacturing Co., Los Angeles, Calif.

Tractor Cab Is Shorter, Increases Trailer Pay Load

What is claimed to be the shortest conventional heavy-duty truck-tractor cab arrangement ever developed in America measures 89 in. from front of bumper to back of cab.

The short dimension makes possible a larger pay-load carrier without exceeding the overall length limits for tractor semi-trailer combinations.

The reduced length—13 in. shorter than the company's conventional units —is accomplished by moving the conteur cab forward and allowing the engine to project slightly into the cab. A reinforced fiberglass cover is then fitted over the part of the engine that protrudes under the cowl. MACK TRUCKS, INC., 1355 W. FRONT ST., PLAINFIELD, N. J.

General Use Generators Built by Pacific Mercury

Pacific Mercury, noted for electronic and communication equipment, is now introducing a line of generators. These are the first generators produced by the company since it entered into the equipment field. The line includes AC, DC and diesel-powered electric plants.

The generators have built-in features such as RPM meters; triple-dipped, mildew and fungus-proofed windings; automatic spark advance and ball bearings; extra plug-in receptacles and electric starter. Four-cycle, air-cooled engines have been used, with engines matched in capacity to the generator and engineered to handle reasonable overloads. PACIFIC MERCURY, 14052 BURBANK BLVD., VAN NUYS, CALIF.

Junior Vibrator Kit For Concrete Screed

A kit of junior size vibrating attachments for concrete work is offered for the contractor engaged in sidewalk construction or pavements up to 20 ft wide.

The 1¾ in. dia vibrator head is attached to a 2x6 in. or 2x8 in. timber with two simple clamps, and the screed is moved over the concrete by two handles cushioned in rubber sockets. The ¾ hp motor is attached to one of the tubular handles and the speed-control transformer is attached to the other.

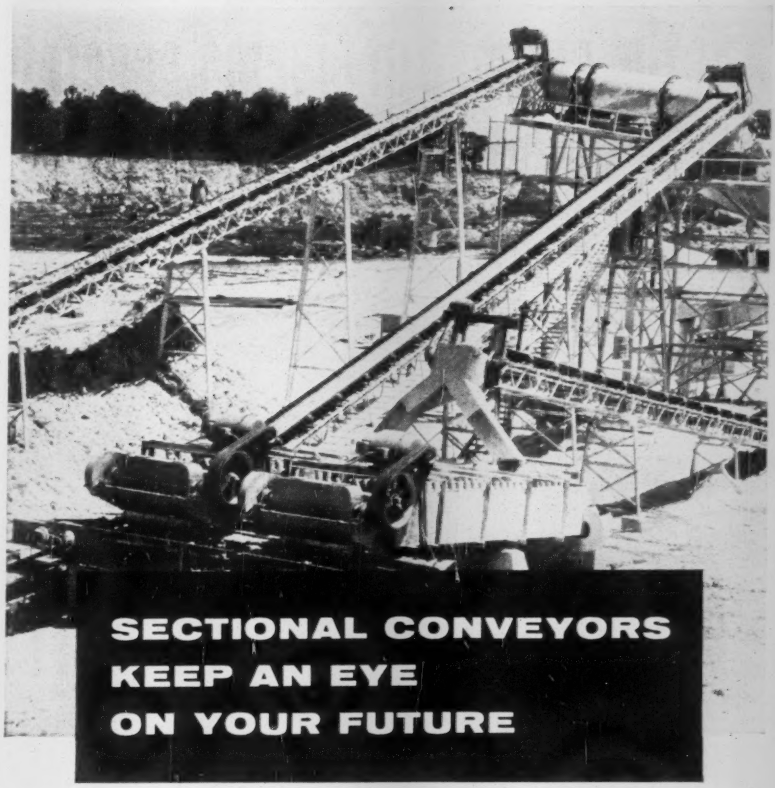
The vibrator head can be easily removed from the screed, and used as an internal vibrator, according to the manufacturer. WYZENBEEK & STAFF, INC., 223 N. CALIFORNIA AVE., CHICAGO 12, ILL.

Frameless Dump Trailer Provides Added Stability

A dump trailer of frameless design is the largest unit of the manufacturer's line. According to the company, the trailer gives 30% more stability than conventional dump trailers, with models ranging from 20 to 24 ft in length.

The trailer is built of 8 ga steel with a ¼ in. wear plate. The double floor has a 2 in. oak filler. Dump action is given by a twin 7 in. hydraulic telescopic hoist with a lift capacity of 40 tons. W. C. HAYES, ANTHONY CO., STREATOR, ILL.

(New Products continued on page 82)



SECTIONAL CONVEYORS KEEP AN EYE ON YOUR FUTURE

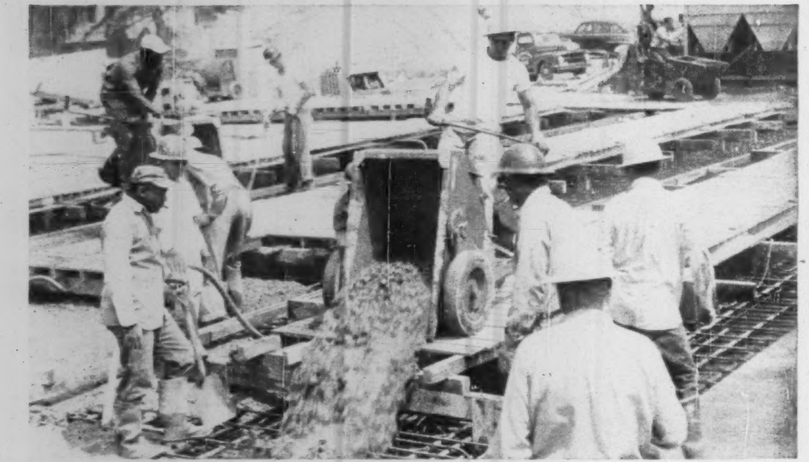
Any conveyor system, whether in a revolutionary oil plant in Colorado or an unloading dock in Brooklyn, has flexibility to meet future needs with these Hewitt-Robins pre-engineered, jig-fabricated sectional units. Designed for a wide range of applications, they find use in sand, gravel, coal, stone, ore, grain, and many other installations. Interchangeability of components, standard design for 2HP and up, capacities up to 1000 TPH at speeds as high as 650 FPM, standard widths of 18", 24", 30", 36", or 42", and easy assembly by your own personnel mean substantial savings of time and money.

Full complements of Hewitt-Robins standard products, including conveyor belting, convenient one-shot lubrication idlers, and standard accessory items are available from stock. Detailed estimates can be made promptly for your individual requirements; economical modifications can be developed quickly by H-R Rock Products Engineering specialists. Hewitt-Robins also builds special conveyor systems capable of handling up to 6000 TPH at speeds up to 850 FPM. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut.

HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

for the purpose of placing concrete



GAR-BRO power carts rate best!

-rate them yourself!

Placing concrete is a very specialized job requiring specialized carts. They should be judged on many other factors than just mechanical features. For instance:—

	GAR-BRO	OTHER MAKES
WEIGHT IS A FACTOR! Heavier carts require stronger and more costly runways. Gar-Bro Power-carts are lightest in their class..	100%	.....
POWER TRANSMISSION IS VITAL! Short hauling distances require fast "stop and go" acceleration. Simple belt-driven Gar-Bro Power-carts can do what no cart with an automotive or automatic transmission can do. They take off faster... they can reverse direction at top speed... they can take rugged handling	100%	.....
TURNING RADIUS IS IMPORTANT! Turning ability establishes the width of runways. Gar-Bro Power-carts U-turn in a 4-foot radius—can be operated safely on a 5-foot runway.....	100%	.....
EASE OF OPERATION! Gar-Bro Power-carts are the simplest to handle. The tiller guides and controls—you push down to go forward and pull up to reverse. No foot clutch... no gear shift... no geared transmission... no steering wheel hazard	100%	.....
COST IS A FACTOR! Gar-Bro Power-carts cost less than any other motorized cart to buy, less to maintain...............	100%	.....

COMPARE ALL THESE FEATURES: 12-14 cu. ft. capacity, 15 m.p.h. speeds, 35 to 45 miles per gallon, positive controlled dumping, heavy duty Timken bearings throughout and low, low maintenance costs.

Write for literature and information.

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Los Angeles, California • Peoria, Illinois
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Los Angeles 21, California

GAR-BRO

The world's most complete line of
CONCRETE HANDLING EQUIPMENT

EQUIPMENT GAR-BRO ENGINEERING SERVICE

THRU TRAFFIC
RIGHT ONLY

Fiberglass Highway Frame Is Both Light and Durable

A highway structure to suspend directional signs on overhead spans is made of fiberglass.

The structure complies with the specifications of all highway departments, say the manufacturers, and spans are available in widths from 40 to 80 ft in 5 ft increments.

In appearance, the new structures are bright and silvery. However, any color is available if desired—the coloring of the fiberglass being accomplished by impregnating with a special coloring agent during manufacture.

Since the color goes all through the material, the highway structures never require painting. GAR WOOD INDUSTRIES, INC., FIBERGLASS DIV., YPSILANTI, MICH.

Steel Cord Plies Increase The Life of Truck Tires

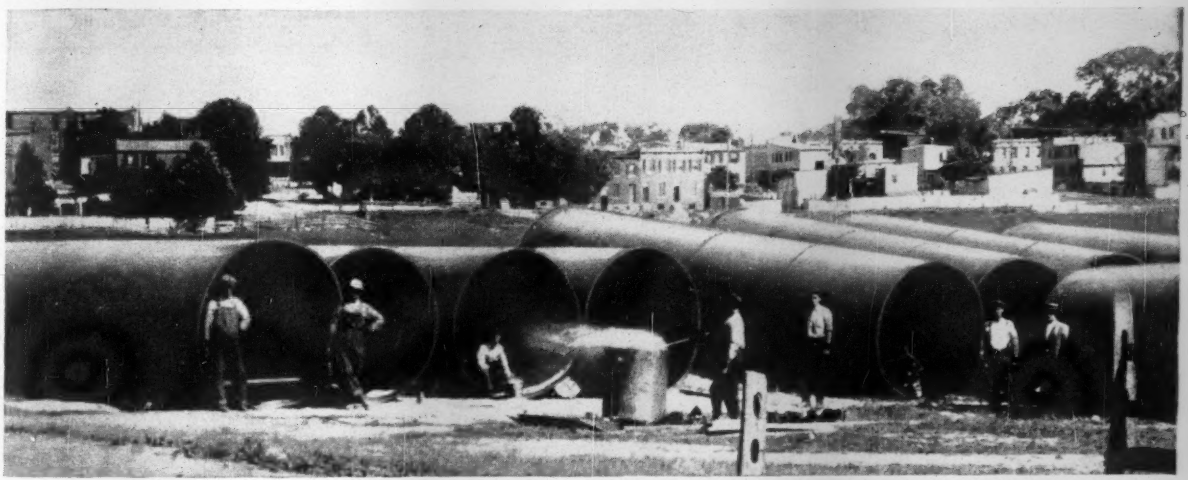
An over-the-road truck tire, built of steel cord instead of fabric plies, is said to have the possibility of up to three times greater tread mileage.

Named the Unisteel, the tire is made up of one steel cable ply running radially from bead to bead, reinforced by three diagonal breaker plies. This belted, locked-together construction permits the tread to roll on the road without the wearing and scrubbing movement usually encountered in conventional tires.

Also, the belted construction, according to the tire designer, can result in greatly increased tread life with substantially reduced running temperatures—up to 100 deg under certain operating conditions.

The tube-type tires are produced in sizes 7.50-20, 8.25-20, 9.00-20, 10.00-10, 11.00-20 and 10.00-22. GOODYEAR TIRE & RUBBER CO., AKRON, OHIO.

(New Products continued on page 84)



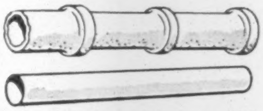
Applying coal-tar enamel in 1915.

Steel Pipe in good shape after 42 years

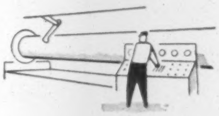
Way back in 1915, Baltimore's Board of Water Supply installed an 84-in. steel main to distribute water from the Montebello Filtration Plant. The 4057-ft-long line is made up of riveted 7/16-in.-thick plates, and was hand-daubed with old style Bitumastic coal-tar enamel.

Today, after 42 years of almost constant use, this line is still giving fine service, with no apparent loss of flow capacity. The last internal inspection of the line, in 1939, indicated the pipe and its coating to be in excellent condition.

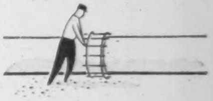
Baltimore is but one of many cities that has had long and successful experience with steel pipe. And, since today's steel pipe is vastly improved—better fabricating methods, better joints, better protective materials—we can safely conclude that *there is no known limit to the service life of coal-tar enameled steel water pipe.*



COMPARE THE COSTS— This drawing compares a single 40-ft length of steel pipe with 16-ft lengths of rigid-walled pipe of the same inside diameter. The steel pipe has thinner walls and a smaller outside diameter; weighs only about one-fifth as much per ft of length. Results: the steel pipe costs less to ship, to handle, and to lay. It requires a smaller ditch, fewer bell holes, fewer joints—only 132 per mile.

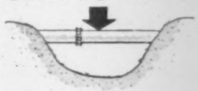


TESTED FOR STRENGTH— Every length of steel pipe is hydrostatically tested at the shop in accordance with AWWA specifications—usually to double the working pressure. What's more, steel pipe can withstand from 3 to 4 times the working pressure before bursting. And steel pipe safely resists water-hammer, shock loadings, and surge.



LEAKPROOF JOINTS— 100 pct bottle-tight joints are a practical reality with steel pipe, whether Dresser couplings or welds are used. That means no water wastage, no costly washouts. And you needn't fear contamination of the contents due to infiltration from without. These joints are quickly made, they're permanent, and they're strong.

CORROSION-RESISTANCE— Modern methods of lining steel pipe with hot-spun coal-tar enamel make it immune to corrosion and incrustation. There is no known time limit to this protection. Many tar-enameled lines have been in service for upwards of fifty years. Coal-tar enamel provides the smoothest surface obtainable, assuring high flow coefficients year after year. Coatings and wrappings protect the pipe from moisture, acids, and alkalis.



BEAM STRENGTH— Steel pipe has the structural strength that is characteristic of tubular steel. It can span long washouts; is often handled in multiple lengths during installation. And steel pipe can stand up under the weight of heavy cover.

WIDELY USED— Some recent users of Bethlehem Steel Pipe are New York City, New Orleans, Philadelphia, Savannah, Reading, Cincinnati, Atlanta, Omaha, Worcester, Colorado Springs, and Boston. Further proof of the superior qualities of steel pipe is its use in thousands of miles of large-diameter gas and oil lines, as well as in high-pressure penstocks throughout the world.

For further information about steel water pipe, kindly contact the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

"Entirely satisfied with RILCO"

Even large Rilco trusses like these go up fast and easy, need no fitting, sawing, drilling at the jobsite. These are trussed arches 71′ 4″ x 124′.

Writes this supermarket builder: "From the standpoint of costs, ease of erection and customer satisfaction we were entirely satisfied with the RILCO materials and with this type of roof structure."

Builders everywhere comment on their satisfaction with RILCO laminated wood bowstring trusses, tied and radial arches and beams. Biggest item with them is, of course, the accurate fabrication of RILCO members, for each is carefully engineered to exact specifications. They arrive at the jobsite ready for erection, with holes drilled for connection hardware furnished. RILCO buildings go up in jigtime—your regular crews erect them fast, saving you days—and dollars. Builders everywhere report successful profitable results—even on their very first RILCO job.

And RILCO laminated members find favor with clients too. They have a low price tag to start with—then because they cannot corrode or rust they slash maintenance costs through the years. Supermarket, factory, garage, warehouse, church, school—whatever your project RILCO can help you build it bigger and better for less.

A & P Supermarket, Sunset Park, Williamsport, Pennsylvania.

Contractor: George H. Roller Company, Inc., Williamsport

For more information contact your nearest RILCO *office.*

RILCO LAMINATED PRODUCTS, INC.
W801 FIRST NATIONAL BANK BUILDING
SAINT PAUL 1, MINNESOTA

RILCO works wonders with wood

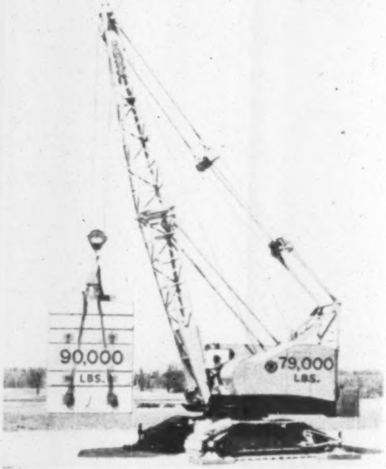
District Offices: Newark, N.J. • Fort Wayne, Ind. • Tacoma, Wash.

Self-Propelled Scraper Scurries for Added Loads

A self-propelled scraper that can haul 21 ton payloads at speeds of more than 31 mph has been developed to meet the earthmovers' need for higher productivity.

A 240 hp Cummins Diesel engine gives the Model CW 215 scraper 10 speeds forward and two speeds in reverse. Fast, easy loading to the 15 cu yd struck capacity is assured by an adjustable-angle cutting edge and long profile bowl design.

Interchangeability with the CWD 214 rear dumper is another feature that adds to the equipment's flexibility. CONTINENTAL COPPER & STEEL INDUSTRIES, INC., WOOLDRIDGE DIV., SUNNYVALE, CALIF.



Crane Lifts Own Weight –Plus 11,000 Lb More

The ability to lift 11,000 lb more than its own working weight of 79,000 lb is an important feature of the new crawler mounted Koehring 545 crane.

When making heavy lifts, pivoted outriggers are swung into position. When not needed they can be folded back or removed completely. Without the outriggers, the crane can travel with 61,500 lb at the end of its 40 ft boom. KOEHRING DIVISION, MILWAUKEE 16, WIS.

New high speed towboat . . . has power, will travel

The *Sally Polk,* first of the new Dravo-3200 towboats, was clocked at an average speed of 12.9 m.p.h. in trial runs with an 8500-ton petroleum tow. She is now in the New Orleans-St. Louis service of Canal Barge Company, Inc.

Another of these high speed 3200 horsepower towboats, the *Crescent City,* has joined the fleet of Sioux City & New Orleans Barge Line, Inc. Design features developed by Dravo during model basin tests in the Netherlands give the "3200" greater pushpower than other towboats of equal size and power.

A third Dravo-3200 is available for late spring delivery.

For more information on Dravo-3200 towboats, or other products and services, write DRAVO CORPORATION, PITTSBURGH 25, PA.

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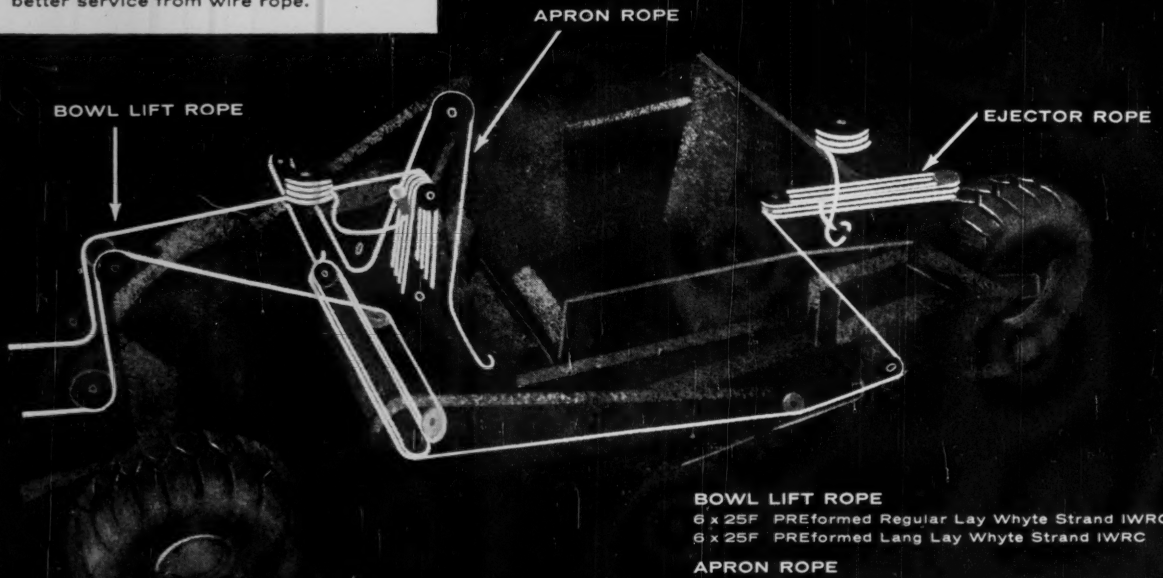
Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping

foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

ONE OF A SERIES of advertisements to help the construction industry get better service from wire rope.

CARRY TYPE SCRAPER



BOWL LIFT ROPE
6 x 25F PREformed Regular Lay Whyte Strand IWRC
6 x 25F PREformed Lang Lay Whyte Strand IWRC

APRON ROPE
6 x 25F PREformed Lang Lay Whyte Strand IWRC

EJECTOR ROPE
6 x 25F PREformed Regular Lay Whyte Strand IWRC
6 x 25F PREformed Lang Lay Whyte Strand IWRC

Macwhyte Scraper Ropes

can lower your yearly rope costs!

Scraper service needs the best wire rope — and the right rope will cut costs.

For carry-type scrapers, Monarch Whyte Strand 6 x 25F IWRC is the *correct* rope. It is specifically designed for the severest service wire rope can get. The outside wires are big and tough. They provide plenty of surface for abrasion-resistance. The independent wire rope core gives extra crush resistance, while the 199-wire PREformed make-up assures a flexibility that matches the rugged demands of constant heavy service.

The thorough Internal Lubrication of Whyte Strand Wire Rope is a further help in extending service life under severe service. Check these features. They mean longer life — and that means less rope for you to buy!

For helpful information about Wire Rope and its correct use on contractors' equipment, write for your free copy of Bulletin 5702. It's loaded with helpful cost-saving information. 108

MACWHYTE *Wire Rope* **COMPANY**

MACWHYTE WIRE ROPE COMPANY
2930 Fourteenth Avenue, Kenosha, Wisconsin
Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel, Plastic Coated and Nylon Coated Wire Rope, and Wire Rope Assemblies. Special catalogs available.

MILL DEPOTS: **New York 4,** 35 Water St. • **Pittsburgh 36,** P. O. Box 10916, 353 Curry Hollow Road • **Detroit 3,** 75 Oakman Blvd. • **Chicago 6,** 228 S. Desplaines St. • **St. Paul 14,** 2356 Hampden Ave. • **Ft. Worth 1,** P. O. Box 605 • **Portland 9,** 1603 N. W. 14th Ave. **Seattle 4,** 87 Holgate St. • **San Francisco 7,** 188 King St. • **Los Angeles 21,** 2035 Sacramento St.

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Publications

Wood decking and flooring – Design information for wood roof decking and heavy timber flooring. Includes a breakdown of insulation values of various roof types, and data on all grades of southern pine available for these uses. 8 page bulletin. Southern Pine Association, National Bank of Commerce Building, P. O. Box 1170, New Orleans 4, La.

Passenger conveyor film–"Moving sidewalks" for moving people in and around air terminals, shopping centers, stadiums and other locations. 15 min. film, in 16 mm black and white. Hewitt-Robins, Inc., Stamford, Conn.

Prestressed concrete film–Basic methods involved in prestressing bridge beams, piles, TT's; also, production of some of the largest prestressed girders ever cast. Film. Food Machinery and Chemical Corp., Florida Division, Lakeland, Fla.

Industrial heater–Construction, application and performance features of industrial heaters. 26 page bulletin, No. 750A. American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.

Laminated wood – Connection details and specifications for glued-laminated wood structural members; applications of laminated wood arches, beams and trusses in church, school, residential and commercial buildings. 24 page catalog. Rilco Laminated Products, Inc., W-801 First National Bank Building, St. Paul 1, Minn.

Stainless fasteners–Thread and design specifications for basic stainless fastening devices; engineering data relating to composition, properties, applications and weights of stainless steel. 52 page stock list and data book. Allmetal Screw Products Co., Inc., 821 Stewart Ave., Garden City, L. I., N. Y.

Culvert pipe–Data on galvanized corrugated metal culvert pipe and accessories. 28 page Culvert Handbook, WC-233. Wheeling Corrugating Co., Wheeling, W. Va.

Insulation–A file folder contains specification sheets for applications of "Uni-Crest," a lightweight expanded polystyrene insulation material, to a variety of perimeter, foundation and concrete-slab insulation problems. The full variety of sheet, slab and block size, together with laboratory-tested physical properties of the material, are presented in tabular form. Uni-Crest Division, United Cork Companies, Kearny, N. J.

Stud welder–Use and maintenance of the new, lightweight Nelson NS-10 stud welding gun. Operating manual No. 6. Nelson Stud Welding, Division of Gregory Industries, Inc., Lorain, Ohio.

Bonding metal–Manufacture of Hortonclad, a composite metal that provides an integral and continuous bond between an alloy or special metal and its backing plate. 32 page brochure. Chicago Bridge and Iron Co., 332 S. Michigan Ave., Chicago 4, Ill.

Building sealants–Elastomeric sealants for various types of building applications, with case histories of curtain-wall installations. 10 page reference manual. Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton 7, N. J.

Photodrawings – Technique of using photographs to convey engineering-drawing information in easy-to-visualize form. 12 page booklet. Eastman Kodak Co., Sales Service Division, Rochester, N. Y.

Mercury vapor floodlights – Operating characteristics, operating economies and color characteristics of mercury vapor lamps; also how to select ballasts. Typical ballast types and mountings. 18 page bulletin. Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill.

Flame-cutting machines–Complete line of flame-cutting machines, including specifications for each machine. 28 page catalog. Lind Co., Division of Union Carbide Corp., 30 E. 42 St., New York 17, N. Y.

Cooling towers–Mechanical features of counter flow cooling towers. 16 page bulletin. J. F. Pritchard and Co., 4625 Roanoke Parkway, Kansas City 12, Mo.

Concrete admixtures – Proper use of concrete admixtures; includes chapters on selection of proper admixtures, concrete uniformity, quality control, evaluating field tests. 22 page booklet. Sika Chemical Corp., Passaic, N. J.

Vibratory rollers–A 4 page bulletin, No. 423, presents the combination 3-wheel roller with Jackson Electric vibratory compactor. Leaflet No. 424 describes the grading and compaction process, by using a combination motor grader and electric vibratory compactor. Galion Iron Works & Manufacturing Co., Galion, Ohio.

Cutting edges–"Hi-Electro Hardened Cutting Edges" points out features of recently developed parts for scrapers and bulldozers. 8 page booklet, offered in English or Spanish. Advertising Division, Caterpillar Tractor Co., Peoria, Ill.

Truck concrete mixers–Hi-Boy Truck Mixers and their component parts, with description of features of the 5, 6 and 7 cu yd models. A section on specifications outlines basic machine requirements and optional equipment. 16 page Bulletin No. 2622. Sales Promotion Dept., Construction Equipment Division, Blaw-Knox Co., Matoon, Ill.

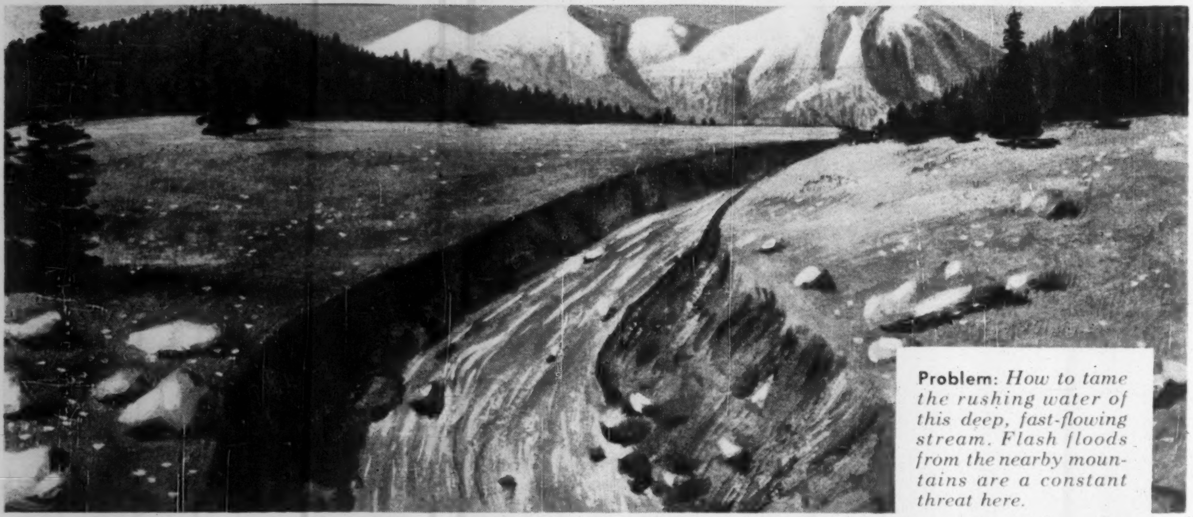
Drilling tool–Detailed specifications covering blast hole drilling tools, including carbide drill bits, drill steel, couplings, adapters, extension steel, and the like. 12 page Bulletin. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill.

Vibratory screens–Complete data and specifications on Syntron pulsating-magnetic screens, concentric-action screens, unbalanced pulley screens, grizzly bar screens and screening feeders. 14 page catalog. Syntron Co., 328 Lexington Ave., Homer City, Pa.

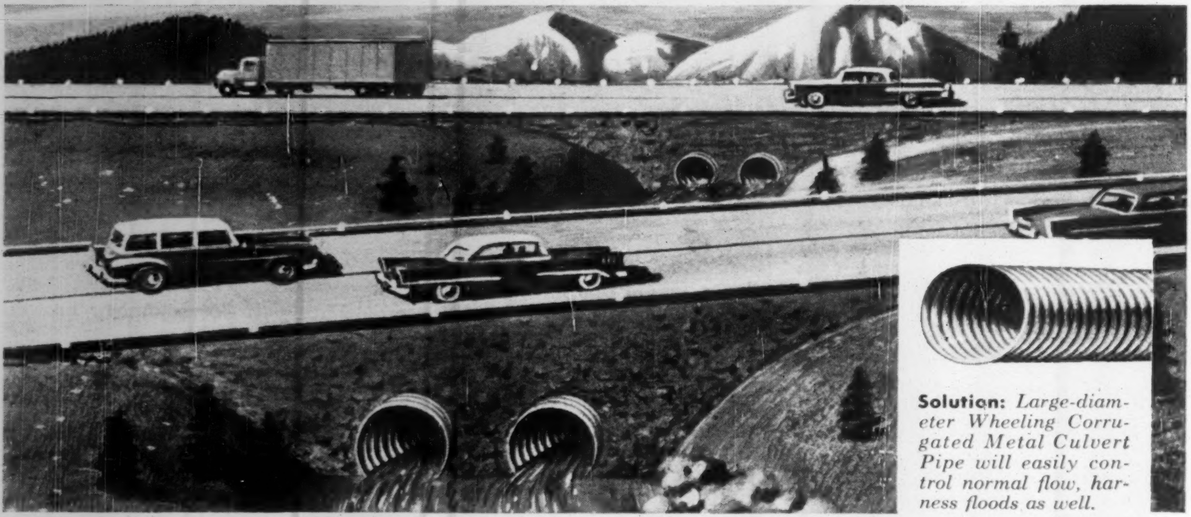
Portable asphalt plant–Features of a new portable asphalt plant with a rated capacity of 30 tons per hour. Bulletin No. 37. Littleford Bros., Inc., Public Relations Dept., 453 E. Pearl St., Cincinnati 2, Ohio.

Crawler tractor–Features of the HD-16 diesel crawler tractor and information on the matched-equipment available for this tractor. Specifications included. Two new specification sheets (MS 1284 and MS 1296) cover models HDs 16 DC and D and HD-6E. 14 page catalog, MS-1289. Allis Chalmers Manufacturing Co., Milwaukee, Wis.

Rubberized asphalt–Featured is a new product called Ramflex, a free-flowing, devulcanized rubber specially prepared for use in combination with asphalt, for highway and general paving applications. 4 page catalog. The U. S. Rubber Reclaiming Co., Inc., P. O. Box 365, Buffalo 5, N. Y.



Problem: *How to tame the rushing water of this deep, fast-flowing stream. Flash floods from the nearby mountains are a constant threat here.*



Solution: *Large-diameter Wheeling Corrugated Metal Culvert Pipe will easily control normal flow, harness floods as well.*

How you can solve stubborn drainage problems—with Wheeling Metal Culvert Pipe

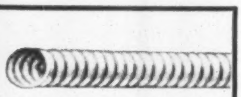
When road-builders come up against drainage problems like these, versatile Wheeling Culvert Pipe comes up with more solutions — at lower cost — than any other type of drainage pipe.

That's because Wheeling Metal Pipe combines flexibility under heavy traffic loads with durability over years of rugged service. It combines easy installation (unskilled labor and light field equipment can handle most jobs) with economical transportation (the long sections of pipe are nestable, won't crack or spall).

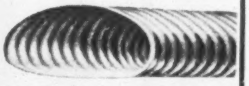
In short, when the problem is drainage, the solution is Wheeling Metal Culvert Pipe.

Wheeling Metal Culvert Pipe or Pipe Arch, in Copper-bearing Steel or Copper-bearing Pure Iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters. Contact your nearest Wheeling warehouse, culvert plant or sales office. Wheeling Corrugating Company, Wheeling, W. Va.

Wheeling
CORRUGATING COMPANY



Small-diameter Wheeling Metal Pipe is ideal for farm and home drainage requirements.



Wheeling Pipe Arch—a wider type of metal pipe with comparatively flat bottom—is used where headroom is limited.

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WHEELING WAREHOUSES, SALES OFFICES OR CULVERT PLANTS ARE IN: ATLANTA BOSTON BUFFALO CHICAGO COLUMBUS DES MOINES DETROIT HOUSTON KANSAS CITY LOUISVILLE MADISON MARTINS FERRY MINNEAPOLIS NEW ORLEANS NEW YORK PEORIA PHILADELPHIA RICHMOND ST. LOUIS.

Breach of Contract

Court allows contractor to recover lost profits

A contractor may recover damages (lost profits) for breach of contract. Measure of damages, at least in Maryland, is the contract price less what it would have cost the contractor to complete the contract.

Law on the issue is discussed at length in a Maryland case[1] where an owner unilaterally canceled a contract for construction of a house.

The contractor sued for damages and the trial court dismissed the complaint on the grounds that evidence of loss of profits was vague and that the Maryland law allows the loss to be recovered only where amount of the loss can be proved with certainty.

Judgment was reversed on appeal, the court holding that the evidence was not too speculative to have awarded damages even if nominal.

In discussing the law, the court made these observations:

"With respect to damages for the breach of a building contract, see 5 Corbin, Contracts, Sec. 1094 (1951), and 5 Williston, Contracts, Sec. 1363 (Rev. Ed. 1937). Corbin states: 'Full performance of the construction contract by both parties would have left the building contractor in possession of the full contract price, less the entire cost of construction required of him by the contract. To put him in as good a position as this, in case of a breach by the defendant, it is necessary to let the building contractor get judgment for the full amount of the contract price promised, diminished by the amount that it saved to the building contractor by reason of his not having to complete the construction. The amount thus saved by reason of the defendant's breach is the cost of completion by the building contractor himself under the circumstances that existed at the time of the breach.'"

"If the party for whom the work is to be performed renounces the contract or otherwise prevents the contractor from performing, the measure of damages is said to be the contract price less the cost of completing the performance of such contract. The fact that it is not possible to ascertain with absolute accuracy the cost of completing the contract does not prevent this measure of damages. Page, Contracts, Sec. 3215 (2d Ed. 1922)."

"The Maryland cases on the question of loss of profits are in accord with the statements of law writers and the comments in law journals and reviews, some of which have been cited or referred to herein, in that such cases also emphasize the now familiar dichotomy of direct and collateral profits. In the decisions in which plaintiffs were allowed to recover direct profits they had lost, we have consistently stated that the measure of damages is the difference between the price specified in the contract and what it would have cost the plaintiff to do, or to complete, the work he had undertaken to perform." The court refers to numerous cases to sustain this proposition of law.

(1) M & R Contractors & Builders v. Michael, 138 A. 2d 350, Court of Appeals of Maryland, Jan. 21, 1958.

Defects in Work

Contractor not liable if specifications defective

In the absence of negligence or of an express warranty that plans and specifications will accomplish a certain result, a contractor is not liable for defects that result from defective plans and specifications.

In a Mississippi case, where the owner brought an action against a contractor to recover damages for defects in the work, the action was dismissed on the ground that the defects did not result from any default on the part of the contractor, but rather as a result of faulty plans and specifications. The judgment was affirmed on appeal.[1]

The appellate court stated: "The law has become well settled, in practically every American jurisdiction in which the matter has been involved, that a construction contractor who has followed plans and specifications furnished by the contractee, his architect or engineer, and which have proved to be defective or insufficient, will not be responsible to the contractee for loss or damage which results solely from the defective or insufficient plans or specifications, in the absence of negligence on the contractor's part, or any express warranty by him as to their being sufficient or free from defects. See Annotation, 88 A.L.R. 797; Havard v. Board of supervisors, Miss., 70 So. 2d 875."

The court, quoting from a New York case,[2] further stated: "If there was an implied warranty of sufficiency, it was made by the party who prepared the plans and specifications, because they were his work, and, in calling for proposals to produce a specific result by following them, it may fairly be said to have warranted them adequate to produce that result. If I agree to produce a certain result according to my own plan, I impliedly warrant its sufficiency; but, if I agree to produce that result by strictly following the plan prepared by another party, he impliedly warrants its sufficiency. The responsibility rests upon the party who fathers the plan, and presents it to the other with the implied representation that it is adequate for the purpose to be accomplished."

In a recent case, the court said: "The cases are uniformly to the effect that a contractor who builds according to the plans and specifications is not responsible for results."[3] The court refers to numerous cases and authorities on this subject. The decision should be a valuable basis for checking cases where this issue is involved.

(1) Trustees of the First Baptist Church v. McElroy, 78 So. 2d 138.

(2) MacKnight Flintic Stone Co. v. City of New York, 160 N.Y. 72, 54 N.E. 661.

(3) Turkish State Railways Administration v. Vulcan Iron Works, 153 F. Supp. 616, U.S. District Court of Pa., July 1, 1957.

Intent of Parties

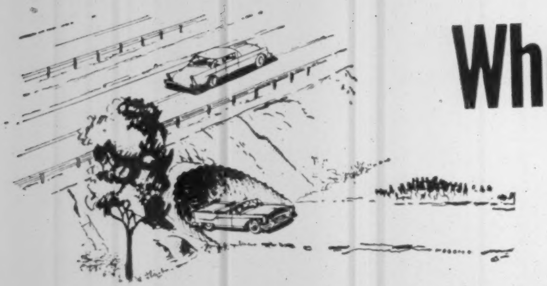
Is controlling factor in construing contracts

It is a rule of universal application that in construing a contract each and every part of it must be taken into consideration and given effect, if possible. The intention of the parties must be obtained from the entire contract.

Although the problem has existed as long as man has had a written language, the courts still ponder the question and litigation continues unabated. Among the mass of rules that have emerged from the gristmill are these:

"An interpretation will not be given to one part of a contract which will annul another part of it. Neal D. Ivey Company v. Franklin Associates, Inc., 1952, 370 Pa. 225, 231, 87 A. 2d 236; 1 Restatement, Contracts, Section 235 (c) 1932."[1]

"The cardinal rule in the interpretation of contracts is to ascertain the intention of the parties and to give effect to that intention if it can be done consistently with legal principles. Contracts must receive a reasonable interpretation, according to the intention of the parties . . . if that intention can be ascertained from their language. In order to ascertain that intention, the



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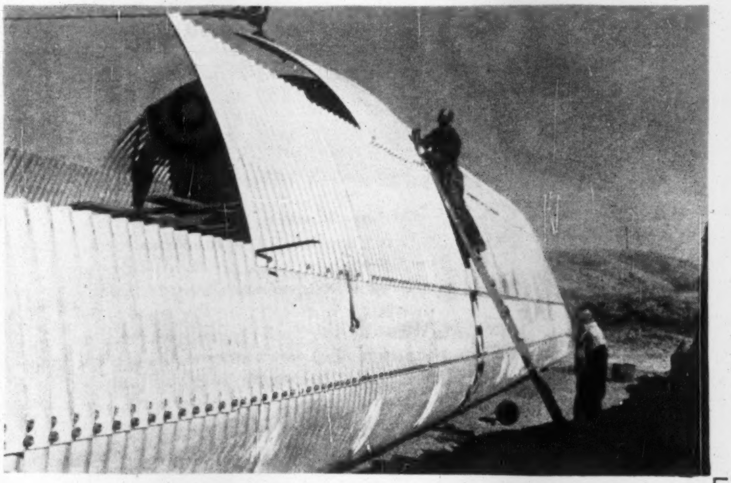
Here is one answer to a new problem brought about by the extensive construction of limited-access highways—the Federal Interstate Highway system. Where local highway systems, farm and ranch roads are cut, Armco Corrugated Metal Structures make it practical to keep the local road open.

Big problem, with so many local roads cut, was to find an *economical* underpass—yet one that would meet loading, safety and clearance requirements. Highway designers and builders are meeting these needs with Armco Structures—the same products that have proved themselves in severe service from coast to coast for half a century.



One typical installation serves under Interstate Highway Route 1 (close to present U. S. 10) in North Dakota. The structure consists of an Armco MULTI-PLATE® Pipe-Arch, 192 feet long. Designed for one lane of traffic, it has a span of 16′-5½″ and a vertical rise of 14′-2¾″. Ends of the structure are step-beveled to a 2:1 slope.

Where traffic volume requires two-lanes, an additional "barrel" can be installed.

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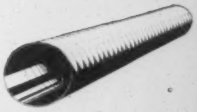

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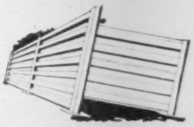
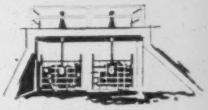
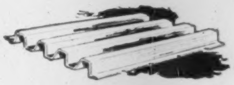


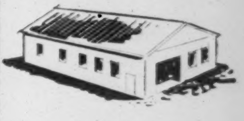
Armco Retaining Walls



Water Control and Sewage Gates



Armco Bridge Plank



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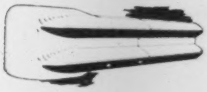

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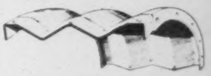

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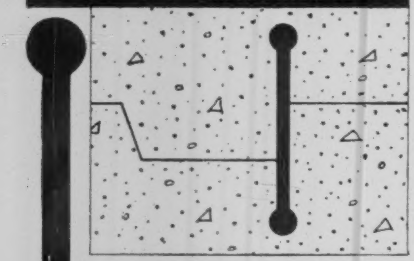

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court may take into consideration the surrounding circumstances, the situation of the parties, the objects they apparently have in view, and the nature of the subject-matter of the agreement. Betterman v. American Stores Co., 367 Pa. 193, 203, 204, 80 A. 2d 66. Moreover in construing a contract every one of its provisions must be given effect if possible and the intent of the parties must be ascertained from the instrument as a whole.[2]

"In determining the intent of the parties to a written agreement we look to what they have clearly expressed, for the law does not assume the language of the contract was chosen carelessly."[3]

In construing a contract, words and phrases are not to be isolated, but related to the context and the contractual scheme as a whole, giving the meaning that comports with probable intent and purpose. The literal sense of the terms used in the contract may be qualified by the context. The construction of the contract should be in accord with justice and common sense and probable intention of the parties. It is to be interpreted as a business transaction entered into by practical men to accomplish an honest and straightforward end. Surrounding circumstances may fix the sense in which words were used in the contract.[4]

(1) Cerceo v. De Marco, 137 A. 2d 296.
(2) Mathewson v. Westinghouse Electric Corp., 138 A. 2d 185.
(3) Daniels v. Bethlehem Mines Corp., 137 A. 2d 304.
(4) Union County U-Drive It v. Blomley, 137 A. 2d 428.

Breach of Contract

Inability to perform may not be a valid defense

A contractor who fails to perform a contract because some event has made performance impossible is not excused from legal liability if the event was reasonably foreseeable.

In the case of subcontracts, one such event may be the owner's disapproval of the subcontractor. In another case, it may be failure of a public authority to approve the owner's or contractor's plans.

The latter situation arose recently in Georgetown Village, Md., where a developer agreed to hire one Carl B. Seeds to operate a sewerage pumping station it planned to build for a development.

A local commission had to approve the station for private operation and was empowered to take it over by purchase or condemnation if it chose. The commission decided to operate the station itself and the contract with Seeds could not be preformed.

Seeds obtained a judgment for damages against the developer for breach of contract.[1]

The court overruled the defense that performance of the contract was frustrated by the commission's action. Such a defense, it said, is not valid if the frustration could have been foreseen.

"The majority of the courts stress this principle in deciding cases on frustration," the court observed, "and hold that if the parties could have reasonably anticipated the event, they are obliged to make provisions in their contract protecting themselves against it".

The same rule applies in subcontracts. In the absence of a provision making approval of the owner a condition of a subcontract, the owner's refusal to approve a subcontractor is not a defense to an action by the subcontractor against the general contractor for breach of contract.[2]

(1) Montauk Corporation v. Seeds, 138 A. 2d 907.
(2) Schaefer v. Brunswick Laundry, Inc., 116 N.J.L. 268, 183 A. 175.

Testimony Is Admissible To Show Contract Meaning

Although courts are quick to protect the sanctity of written contracts, oral testimony may be admissible to show the real intent of written agreements.

This is particularly true where the contract does not embrace the entire agreement or where it is an inadequate summary of the results of complex negotiations.

An illustrative decision was handed down recently in Pennsylvania. The facts were these:

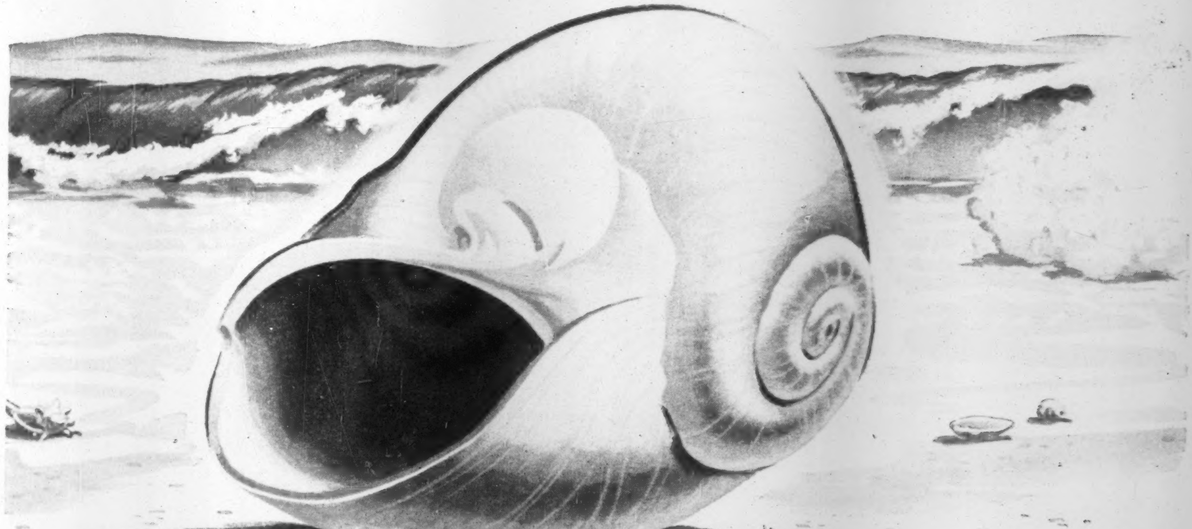
Mellon-Stuart Co., as general contractor, ordered from Morse-Boulger Destructor Co. an incinerator to be used for burning starch waste solution of a plant Mellon was building for National Gypsum Co. at Alexandria, Ind.

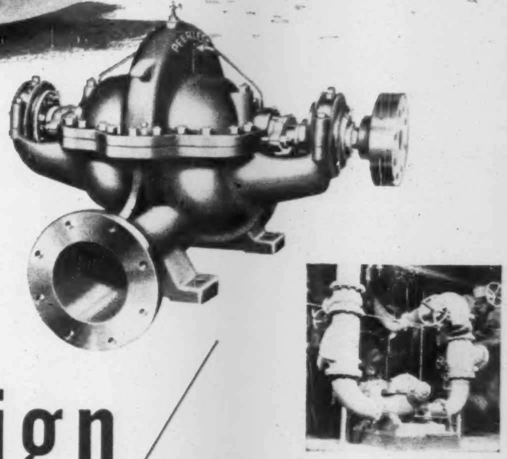
During preliminary negotiations, a representative of National, with the full knowledge of Mellon, told Morse the waste materials to be burned would be limited to solids of 1%. Solid content turned out to be higher and the incinerator was not satisfactory.

Contract itself was merely a brief confirmatory order.

In a suit against Mellon for the balance of the purchase price, Morse was granted a judgment.[1]

The court found that the contract necessarily included the analysis of the starch waste and that testimony on the





"Field tested" for thousands, perhaps millions, of years, the simplicity of design of this sea shell has proved its practicability as dependable housing. In its field, the design of the Peerless Type A horizontal split-case pump is quite as remarkable. The split at the center line allows easy maintenance without disturbing the piping. The rotating element lifts out as a unit for inspection or repair. Mechanically and hydraulically, the quality and operation of this pump is unsurpassed — *it is the type of pump you can apply with absolute confidence to general purpose pumping duties in the broadest sense.* An added advantage: the Type A pump line is the broadest offered by any manufacturer.

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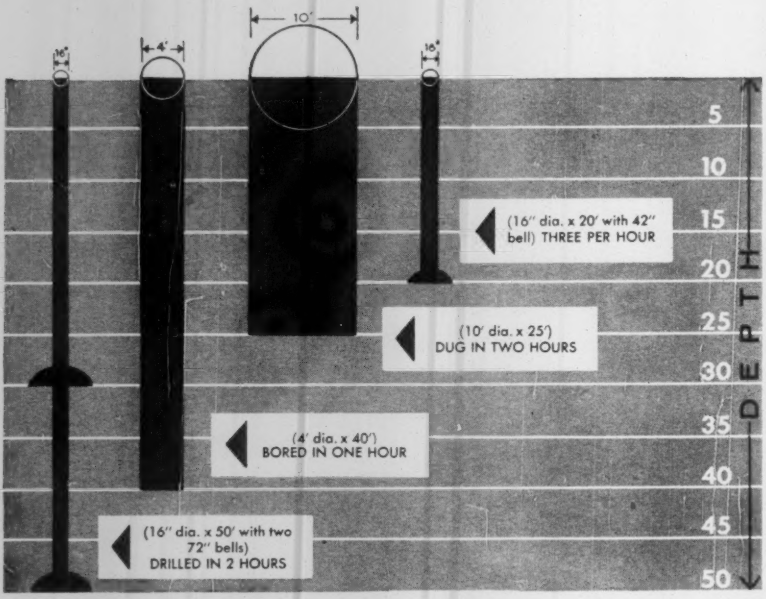
16"
4'
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DEPTH
(16" dia. x 20' with 42" bell) THREE PER HOUR
(10' dia. x 25') DUG IN TWO HOURS
(4' dia. x 40') BORED IN ONE HOUR
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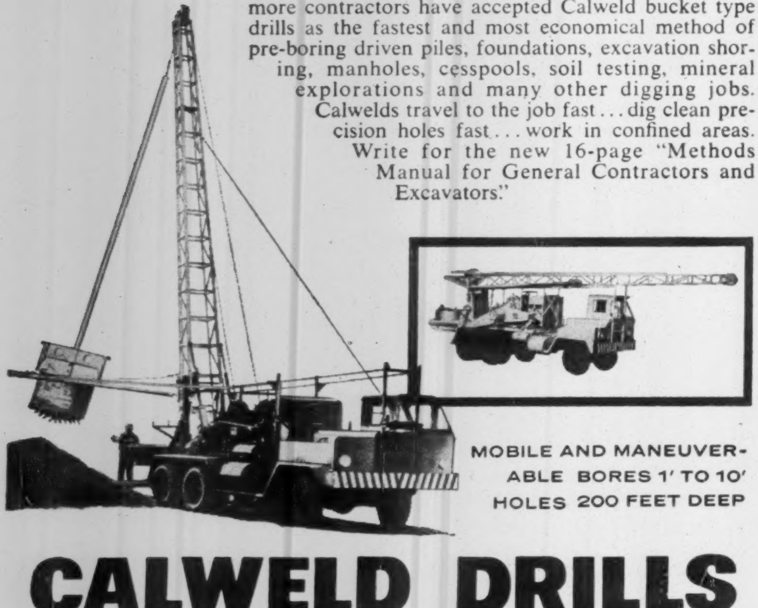
Here's digging speed and excavating capacity to handle hundreds of construction jobs. That's why more and more contractors have accepted Calweld bucket type drills as the fastest and most economical method of pre-boring driven piles, foundations, excavation shoring, manholes, cesspools, soil testing, mineral explorations and many other digging jobs. Calwelds travel to the job fast . . . dig clean precision holes fast . . . work in confined areas. Write for the new 16-page "Methods Manual for General Contractors and Excavators."



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issue was admissible. The order, itself, it said, was not the complete contract and extrinsic evidence was necessary to show what the parties intended.

(1) Morse-Boulger Destructor Co. v. Mellon-Stuart Co., 138 A. 2d 152, Superior Court of Pennsylvania, Jan. 21, 1958.

Contractor May Escape Liability for Defects

A contractor is not liable for defects in work resulting from instructions given him by the party for whom the work is being done

The rule was applied recently in a New York case in which a general contractor had sued a subcontractor for defective work in the roof he was to install.

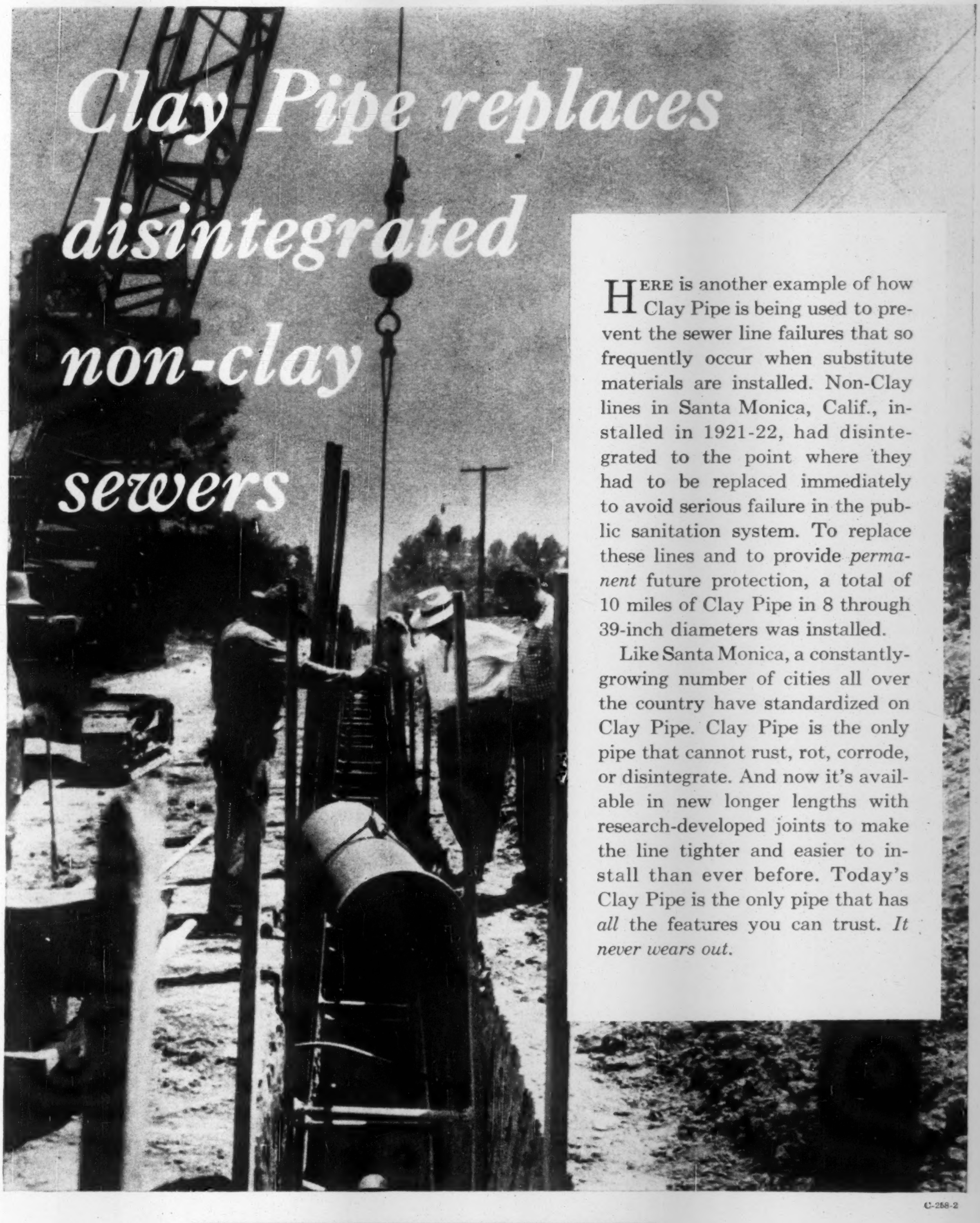
The subcontractor claimed that in erecting the roof he was compelled over his protest to do the work according to instructions by the general contractor.

At the trial, the judge charged the jury that it was the duty of the subcontractor to perform the work in a good and workmanlike manner. The attorney for the subcontractor requested the judge to charge the jury that if the evidence showed that the general contractor gave orders to the subcontractor as to the manner of performing the work and that the subcontractor followed those orders, the general contractor could not be heard to complain about the manner of performance. The court denied this request, to which an exception was taken. The trial court granted judgment to the general contractor but this judgment was reversed. Court said the failure to grant the request of the subcontractor constituted reversible error and directed that a new trial be had.

The law is well established that a contractor is not responsible for defects in work that result from faulty plans and specifications or as a result of instructions given by the party for whom the work is being done.

(1) Lesniak v. Chant, 167 N.Y.S. 2d 767, N.Y. Supreme Court, Appellate Division, Fourth Department, Nov. 15, 1957.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*


Clay Pipe replaces disintegrated non-clay sewers

HERE is another example of how Clay Pipe is being used to prevent the sewer line failures that so frequently occur when substitute materials are installed. Non-Clay lines in Santa Monica, Calif., installed in 1921-22, had disintegrated to the point where they had to be replaced immediately to avoid serious failure in the public sanitation system. To replace these lines and to provide *permanent* future protection, a total of 10 miles of Clay Pipe in 8 through 39-inch diameters was installed.

Like Santa Monica, a constantly-growing number of cities all over the country have standardized on Clay Pipe. Clay Pipe is the only pipe that cannot rust, rot, corrode, or disintegrate. And now it's available in new longer lengths with research-developed joints to make the line tighter and easier to install than ever before. Today's Clay Pipe is the only pipe that has *all* the features you can trust. *It never wears out.*

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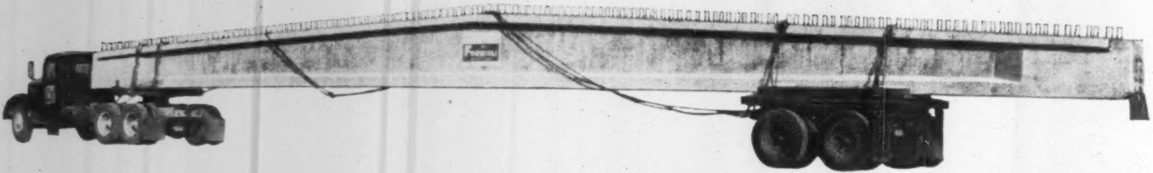


(Below) Positioning one of the four 97′ long, 32-ton prestressed beams for the gymnasium. Beams were trucked to job from manufacturer's Berlin plant.

PRECAST STRUCTURAL CONCRETE

CHOSEN FOR ECONOMY, APPEARANCE, AND QUICK DELIVERY

Architect: Johnson & Boutin, Washington, D. C.
Contractor: Joseph Bahen Construction Co., Washington, D. C.
Structural Engr.: Carl Hansen, Silver Springs, Md.
Precast, Prestressed Units Manufactured and Erected by:
Formigli Corporation, Berlin & Williamstown Junction, N. J.
Ready Mix Concrete for All Structural Units Supplied by:
Trap Rock Industries Inc., Palmyra, N. J.

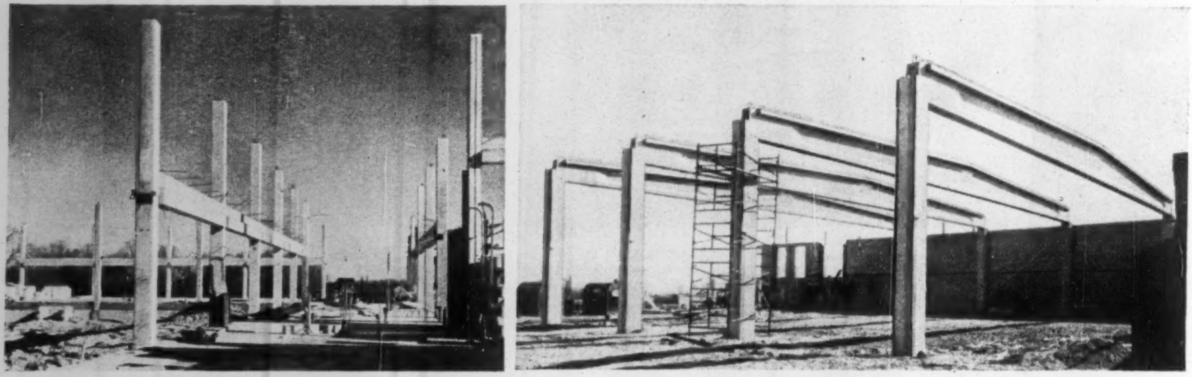
Since much of the structural frame of Our Lady of Good Counsel High School in Wheaton, Md. is to be permanently exposed, appearance as well as strength is important.

Precast concrete was chosen for the job as the most economical way to assure quality structural units with pleasing, even-textured surfaces. Moreover, precast construction permitted quick, easy erection of the structural frame, even though the work was done during the winter.

In the manufacture of both precast and prestressed units, the Formigli Corporation used concrete made with Lehigh Early Strength Cement for maximum production efficiency. Result—all units complete and ready for delivery within 60 days.

This is another example of the advantages of precast structural concrete—and Lehigh Early Strength Cement.

LEHIGH PORTLAND CEMENT COMPANY Allentown, Pa.



In addition to the four beams for the gymnasium (seen in photo at right), the school structural system required 72 precast columns, 114 spandrel beams, 190 lintels and sills, 2655 precast joists, and 1000 precast bridging pieces for the joists.

University of California's Harmer Davis (center) and a staff of specialists are curing ills in . . .

Transportation: A Challenge for ITTE

Not long ago—on a Los Angeles test site—a remotely-controlled vehicle with an instrumented dummy in the driver's seat was crashed into a rigid obstacle to gage effects of collisions. Some 400 miles away, in Berkeley, a truck equipped with different types of mufflers was measuring highway noise.

Behind both studies is the trail-blazing Institute of Transportation and Traffic Engineering, which operates within the University of California's departments of engineering at Berkeley and Los Angeles. And, in turn, behind the Institute's growing record of statewide service is a team of men, headed by Harmer E. Davis as ITTE director.

Under the watchful eye of Harmer Davis, ITTE is carrying out a man-sized mission—education and research related to design, construction, operation and maintenance of highways, airports and allied facilities for public transportation. It also shoulders added responsibility of interrelated problems dealing with traffic control, highway safety and design.

ITTE can take credit for curing many transportation ills in a state where traffic tends to be fin-to-fender. Yet it is barely 10 years old.

Back in 1947 mounting transportation problems in tourist-trodden California produced a period of near-crisis. It was then that state legislators—deciding strong medicine was needed—pushed through laws aimed to act as a tonic to transportation. One of these set up ITTE, set aside $350,000 for first-year functions.

This was where Harmer Davis came in. A professor of civil engineering at Berkeley, he had logged up 18 years research experience in the University's engineering materials laboratory. When ITTE opened shop early in 1948, he was asked to help with its development. The assignment was supposed to be a temporary one. As one college colleague puts it: "Originally, the University wanted someone with a 'name' to head ITTE. But Harmer did such an outstanding job that it kept him on."

Harmer Davis, cloaked in classroom and laboratory atmosphere, wasn't certain he would like the new post. "It meant shifting from physical research—where you can come up with answers you can put your teeth into—to dealing with people and organization." But today he concedes: "There was never a dull moment, and here I am."

The teacher-researcher turned out to be an affable, able administrator. But he is the first to point out that ITTE's deeds have been due not only to workers within the Institute, but to people outside as well.

For example, there's the advisory committee—some 20 University appointees representing a cross-section of viewpoints in transportation. Besides helping to guide ITTE undertakings, these experts add practical know-how to research and extension projects. But their special forte, perhaps, has been to keep open lines of communication with other researchers and the field of operations.

Administration of the Institute is handled through engineering departments on both campuses. At Berkeley, a Division of Transportation Engineering—set up parallel to other engineering divisions—directs course work. At Los Angeles, transportation, like other engineering subjects, is incorporated in the unified engineering curriculum.

ITTE management is in the hands of an executive committee uniting the director, two assistant directors (Norman Kennedy at Berkeley, J. H. Mathewson at Los Angeles) plus M. P. O'Brien, dean of the college of engineering at Berkeley, and L.M.K. Boelter, dean of the college of engineering at Los Angeles. This policy-making quintet also takes on the task of supervising monetary matters. (ITTE, bankrolled by the University budget, has an annual fund of over $400,000.)

ITTE is not an unwieldy organization. It's staffed by some 25 specialists—8 of them on the southern campus—plus about the same number of general assistants. Most of the specialists shuttle between teaching and research (Harmer Davis himself primes students in soil mechanics and foundations, group and individual studies and research in transportation). And several are engaged jointly by the Institute and other engineering divisions, with the latter footing a share of their salaries.

From its infancy, ITTE had to face up to a blunt fact: Transportation takes in so many branches that no one is likely to be posted on all. So, says Harmer Davis, it seemed logical to design the scheme of technical operations around a small team of individuals—"each a specialist in some important segment of the field, yet having an appreciation of over-all aspects."

His philosophy goes farther: "If you want to develop individual thinkers, you have to give talented people full rein. In their functions of teaching and research, universities aren't line organizations. So to the utmost extent possible, we in ITTE work by what you might call 'cooperative individualism'."

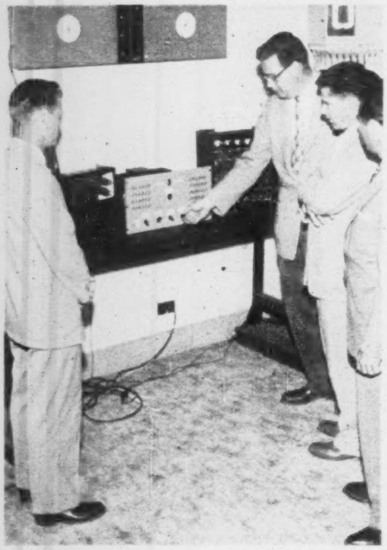
• **The educator emerges**—Harmer Davis' choice of career was not merely a matter of chance. "Dad was a builder, so it's in my blood." And it was the influence of construction in the early Twenties that moved the Davis family from Rochester, N. Y. (where Harmer was born 52 years ago), to California, where the post World War I building boom was in full swing.

When it came time for college, the builder's son picked architecture for his field of study. But he shifted to civil engineering—"I seemed to be more at home there"—and it was in this field that he received his B.S. degree (with highest honors and as a Phi Beta Kappa) at Berkeley in 1928.

After graduation, he looked around to see where he could grab a foothold in structural engineering. But Raymond E. Davis—no relation, but a famed and familiar figure on the Berkeley campus in his role as civil engineering professor and director of the engineering materials laboratory—talked him into staying on to do graduate work.

From then on the young engineer's interest began to swing to research. And from 1928 to 1930—while working toward an M.S. in civil engineering—he served as an assistant in the University's testing lab.

After collecting his master's, he again was about to head out into the field. But this time he was persuaded to take an instructorship. Soon afterward the depression began, bringing in public works and a boom in research of materials and structures. And for the next 15 years—as research engineer in the University lab—he was kept busy with the painstaking process of research in materials and structures, including many problems connected with highways.



SHORT COURSES, such as this one in traffic engineering fundamentals, are one phase of ITTE extension program that attracts an annual enrollment of over 3,000.

Today, the research bug is still in Harmer Davis' blood. But ITTE duties mean that he must lend a hand to on-campus education and extension services as well as research.

• **On-campus education**—The Institute's college-level program, as explained by Director Davis, has three objectives:

- To furnish competent instruction in undergraduate courses involving transportation engineering.
- To establish a graduate program of transportation engineering for professional education of advanced engineering students.
- To provide, through the graduate program, for development of a few selected graduates with a broad outlook on transportation problems.

ITTE looks upon transportation today as an unprecedented challenge. And so—anticipating an emerging need for engineers with an over-all grasp of transportation puzzles—it offers opportunities at both campuses for taking up transportation and traffic engineering as part of a general engineering education. Berkeley undergraduates may stress transportation in their last two years of civil engineering; choose such subjects as highway, railroad and traffic engineering; route surveying; economics of location; transportation economics.

Graduate students at both University sites can continue engineering education with a broad scope of studies in transportation and traffic. Los Angeles emphasizes human factors, motor vehicle collision characteristics, traffic flow simulation, analysis and programming of transportation data on high-speed computers. Berkeley accents planning and design of highway and air transport facilities (including materials and structures); engineering administration, economics and finance; street and highway illumination. Both give attention to transportation theory, traffic engineering and traffic safety.

At each campus, highlights of other departments are tucked into ITTE's graduate program. These include city and regional planning, statistics, economics, psychology and public administration.

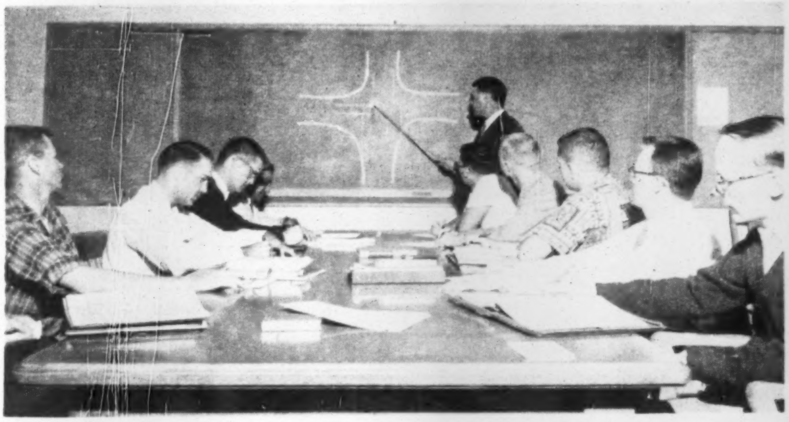
Harmer Davis interprets ITTE's attitude on specialization this way:

"We feel that we are preparing young men for a lifetime career. We don't believe that they usually know exactly what niche they may later fit into, so we tend to design a rather broad program so far as those first few years are concerned. A result is that the amount of specialization that we can give at the undergraduate level is relatively small. We feel that undergraduates must be well rounded in physics, chemistry and mathematics, and that such emphasis as is possible be in subjects fundamental to a broad area—such as materials and hydraulics for those pointing toward civil engineering."

Thus he favors a fairly broad four-year engineering foundation, leaving the student to pick his specialty later on. "Often such a choice can be better made when a man shows promise of rapid progress as a result of experience in the field. He is then more mature, knows what questions he wants answered, and generally is more disposed toward absorbing advanced professional training."

A case history of one ITTE graduate helps prove Harmer Davis' point. After getting his B.S. in CE and joining a road department in the West, this engineer realized that he wanted highway work for a career. "But I didn't feel that the extent of highway training in a normal CE degree had prepared me sufficiently for the type of work I desired to perform in the field."

So he enrolled at the Institute, obtained a Master of Engineering Degree in transportation. Today—a design engineer with a top U. S. engineering firm—he is a strong ITTE booster. "Its program already has advanced my career considerably, both in position and financially. The wide field of activities and subjects in the Institute has given insight into many problems that men who



ON-CAMPUS EDUCATION carried out by ITTE features undergraduate offerings in transportation engineering within the civil engineering curriculum, as well as graduate programs designed to develop a broad outlook on transportation problems.

have been in the field for years have not realized existed."

- **Research projects**—About half of ITTE's effort has gone into research. And—recognizing that research ranges from organized fact finding to solve a problem at hand to forays into the unknown or pursuit of a theory—it tries to channel main work near the middle of the road. It excludes small problems, but encourages some work out of which new concepts may grow.

At present, about 30 projects are under way. Harmer Davis sorts them into eight broad groups:

- **Transportation theory**—This is derived from mathematical and logical analysis of traffic flow and long-distance air travel patterns. Work centers on fundamentals and improving practical techniques of travel forecasting.
- **Economics and administration**—Major concerns are long-range planning and financing, principles of operations of engineering organizations, and interrelations—both among modes of transportation and organizations of various jurisdiction. Special attention is being given to urban matters, including resident and commuter travel patterns.
- **Airport planning**—These projects deal with geometric and structural features of airports. Under contract with the Airways Modernization Board, ITTE is measuring turn-off speeds and deriving high-speed exit taxiway designs for a full range of military and civil aircraft.
- **Highway planning**—Typical project: Measuring skid resistance and riding quality on hundreds of road sections, supporting an extensive study of pavement surface design.
- **Traffic engineering**—Studies cover traffic flow and route capacity, criteria for traffic controls, design of controls as governed by driver reaction, and flow simulation as a basis for systematic area control.
- **Human factors**—Principal work deals with physiological aspects of collisions, attitudes of multiple-offense vehicle drivers, and development of an advanced driver simulator for across-the-board study of driver behavior.
- **Vehicles**—Collision research figures here, too. A variety of studies deals with traffic noise and visibility. Performance tests are run on vehicle illumination devices and safety belts (ITTE operates the testing agency for the California Highway Patrol).
- **Materials and structures**—Behavior of asphalt mixtures and soil characteristics under repeated loading is being investigated. Equipment has been developed for field measurement of soil moisture and density by radioactive probes. Mobile strain-measuring equipment has been used to study stresses set up by dynamic loading of actual bridges.

Harmer Davis emphasizes that ITTE is trying to treat as wholes many things that heretofore have been seen and studied in pieces. For an example he points out how problems associated with driver behavior and vehicle operation have been lumped together. Once this is done, two broad ways of tackling the combination begin to look promising:

- Develop better understanding of human beings in traffic situations—a kind of "human engineering" approach. Do people with certain attitudes become traffic violators? Do fast drivers have more accidents than slow ones? Can some accidents be explained by understanding the interaction of psychological and geographical aspects of the trip? What is the relationship of speed in accidents to human survival? It was

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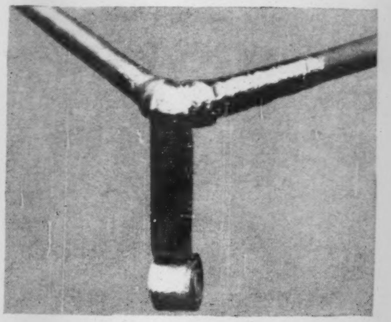

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5"	106	104	51	44
6"	151	152	99	53
8"	280	278	176	128
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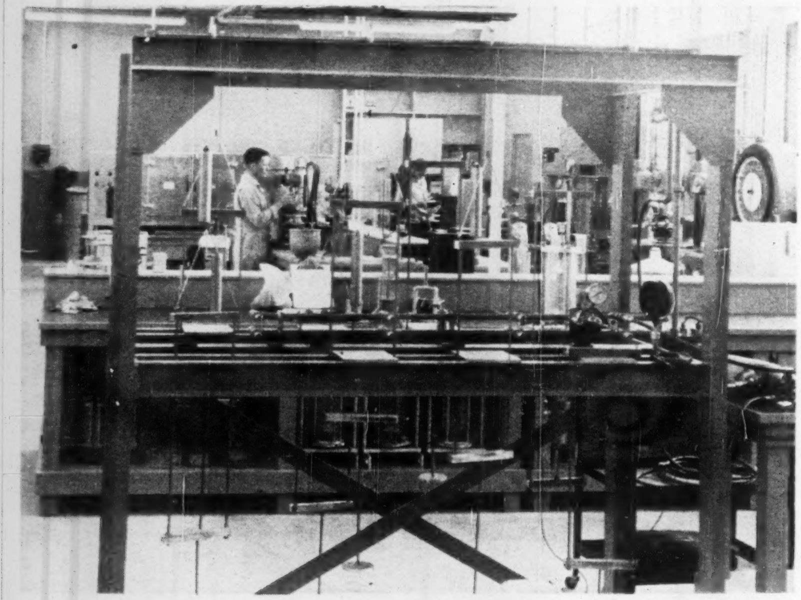


RESEARCH ACTIVITIES, which account for about half of ITTE's effort, currently are concentrated on some 30 projects. Laboratory work ranges from basic research in soils through studies of facilities and system operations to driver behavior.

to answer these questions that a small team boasting psychologists and statisticans as well as engineers was set up on the southern campus. This now has evolved into the driving-simulator design group.

• Consider over-all characteristics of traffic movement—think of vehicles as particles in streams of flow, to learn what they tend to do under different road conditions, and how as a mass they respond to various controls. And this is the tack taken in much of the traffic engineering research on both campuses.

• **Extension program**—"We try to find out what kind of information should be summarized and interpreted for men-on-the-job." This is Harmer Davis' explanation of the third major phase of ITTE activities—extension services.

Here ITTE's record speaks for itself: Close to 3,000 Californians enroll each year in extension offshoots (50% in conferences, 45% in short courses, 5% in credit courses).

Field work has been termed "the key" to planning extension programs. ITTE staffers don't sit back and wait for suggestions—they buttonhole officials in road agencies and other organizations to find out what's needed as well as to evaluate previous offerings. Staff members contend that only through close contact with operating agencies and individuals can ITTE subjects be adjusted to actual needs and coordinated with work of other groups.

• **General services**—"You may find this one hard to document," says Harmer Davis, "but we feel that ITTE performs an important public service by providing facts and neutral opinion at the places where they are most usable. Staff members frequently are called upon to advise legislative committees, public officials and citizens' organizations on transportation matters. Such provision of facts and unbiased appraisal of problems can be a significant contribution to the making of public policy."

Then, too, both to reinforce educational procedures and to pass on research results, ITTE has set up a publishing program. Through it, information collected or developed by the staff is made available to the field in a variety of publications and in papers delivered before meetings.

Harmer Davis himself is responsible for a good portion of technical papers. As far back as the 1931 convention of the American Concrete Institute, he, as co-author with Raymond Davis, received the Wason Medal for the most meritorious paper presented. More recently, his subjects have ranged from cements, soils and asphalts to highways and transportation—and he is co-author of books on portland cement concrete and materials testing.

The ITTE head firmly believes that real professional life is one of continuous education, and that an engineer should be much more than a technician.

"His continuing education should be aimed at development of the whole man and enjoyment of the full life."

The engineer, he feels, must constantly strive toward as balanced a development as his capabilities will permit, along three lines:

- **Technically**—"We don't need to be greatly concerned here. The engineer generally desires to be more proficient technically."
- **As a citizen**—"From time to time we hear (and forget!) exhortations voiced in our engineering meetings that the engineer should take greater interest in public affairs."
- **Intellectually**—"We should not leave to chance the development of our powers of comprehending, judging and reasoning with respect to the broad problems that face us as a supposedly intelligent segment of humanity. Let me call attention to the possible frustrating effect upon our intellectual life of overemphasis on mere technical knowledge."

What are some of the critical deficiencies in engineers?

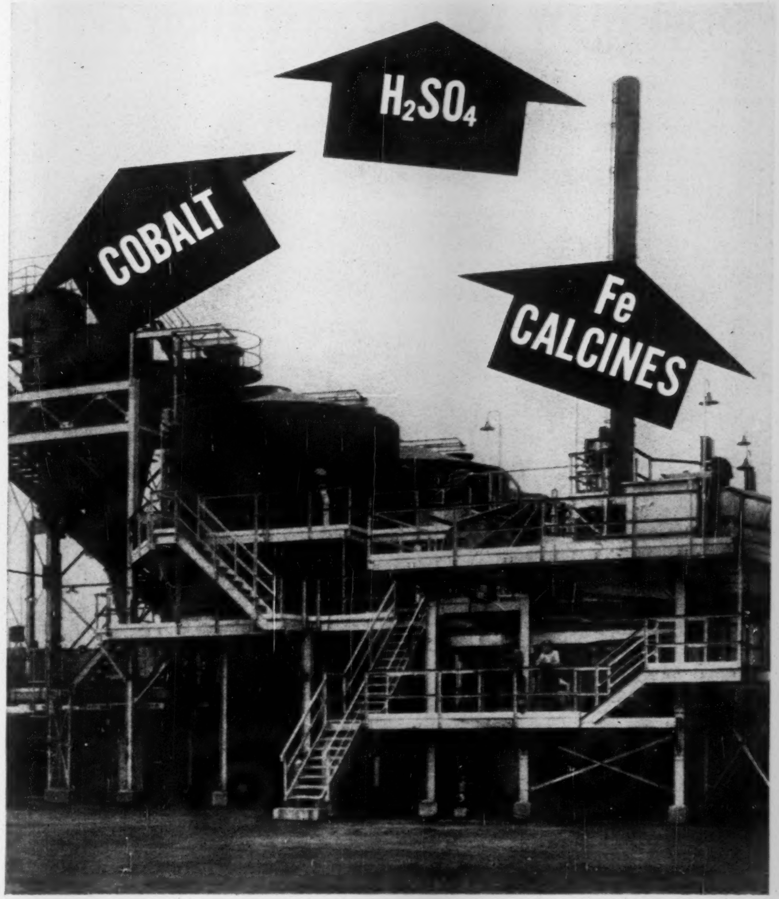
ITTE's director feels that most of them lie outside the engineering field—perhaps in human relations, history, economics. "But I am sure that one of them is facility in the art of communication. And an idea is no good unless it is communicated."

He points out that engineers may arrive at sound conclusions and worthy plans, but unless they can be interpreted in terms the public can understand, it is difficult to win acceptance. Communication, he says, is an art, a skill that engineers sometimes reject as being outside their scope of activities. "Yet many a well-designed job cannot be carried out because it lacks public support. And the missing link is public understanding."

Today—in a state where there are close to 7 million motor vehicles and more than 3,000 annual traffic deaths—ITTE still has a big job ahead.

But Harmer Davis, taking stock of accomplishments as ITTE rolls by the milestones, is optimistic. He hopes that the Institute will have at least two results:

- By fostering, coordinating and guiding study and research, it will develop new information and analytical procedures that will add to the economy and effectiveness of transportation.
- By stimulating interest in transportation by its activities, as well as by formal teaching, it will contribute its share in development of future leaders in the field—"leaders who we hope will have broad vision and perspective as well as a high order of technical competence."



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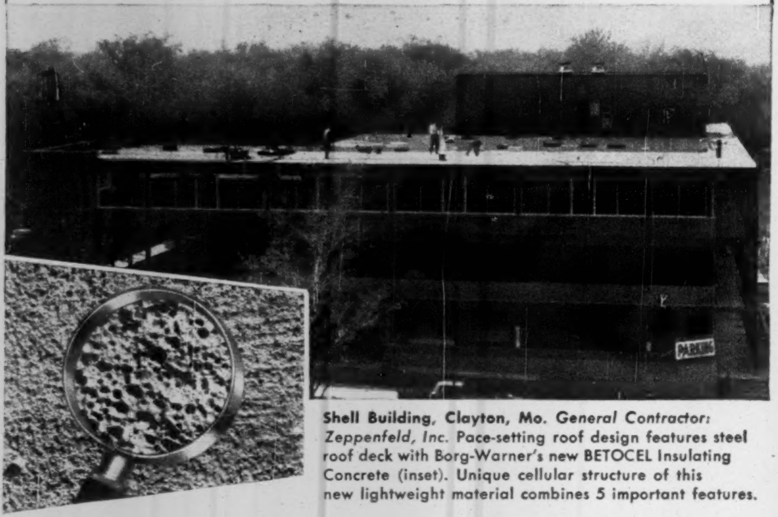

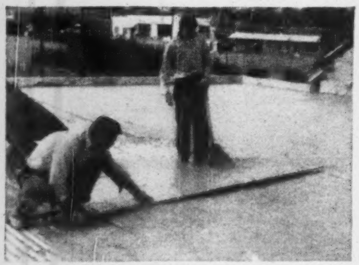

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New Vice President, H. W. Haberkorn

PP&L Names Haberkorn New Construction Chief

H. W. Haberkorn has been named vice president in charge of general construction for Pacific Power & Light Co., San Francisco.

Mr. Haberkorn, now manager of hydroelectric construction, will succeed Arthur J. Swank, who has been elected vice president in charge of electric operations. The changes will take place July 1.

Home Builders Foundation Elects Satin President

David R. Satin, a Kalamazoo, Mich., contractor, has been named president of the newly formed Home Builders Foundation, Inc., of Michigan State University. Mr. Satin, vice president of Albert-Satin Construction Co., has been active in the National and Michigan Association of Home Builders.

The foundation has been set up to provide scholarship and research funds for the university's four-year residential building program.

Schull Named to Florida Inland Navigation Agency

Herman W. Schull has been named chief engineer of the Florida Inland Navigation District. He will succeed Gen. G. A. Youngberg, who held the post for 31 years and who will remain as an adviser.

Colonel Schull retired from the Corps of Engineers last July after serving as district engineer at Jacksonville, Fla., from 1952 to 1957. He was formerly lieutenant governor of the Panama Canal Zone and vice president of the Panama Canal Zone Co.

Pacific Gas & Electric Co. Gets New Construction V-P

Joseph Pirtz, Jr., has been appointed vice president in charge of general construction for Pacific Gas and Electric Co., San Francisco.

Mr. Pirtz has 21 years of service with the company and at present is manager of hydroelectric construction. He joined PG&E early in 1937 after earning his civil engineering degree at the University of California. Currently, he is in charge of PG&E's $80 million Kings River hydroelectric development, which includes the Haas underground powerhouse.

Careers

Public Works

W. H. Swenson has resigned from the Bureau of Reclamation to join Wenzel Engineering Co., Great Falls, Mont.

Col. Richard F. Ebbs, deputy division engineer of the North Pacific Division, retires from the Army Corps of Engineers May 31, after 30 years' service.

Col. Paul H. Symbol, will become district engineer for the Corps of Engineers in Walla Walla, Wash., in July. He will succeed **Col. Myron E. Page, Jr.,** who is being assigned to the chief of engineers office in Washington, D. C.

Associations

L. J. Busby of Wisconsin Culvert Co., Madison, was elected president of the Corrugated Metal Pipe Association at the organization's Third Annual Meeting in Chicago in March.

Business

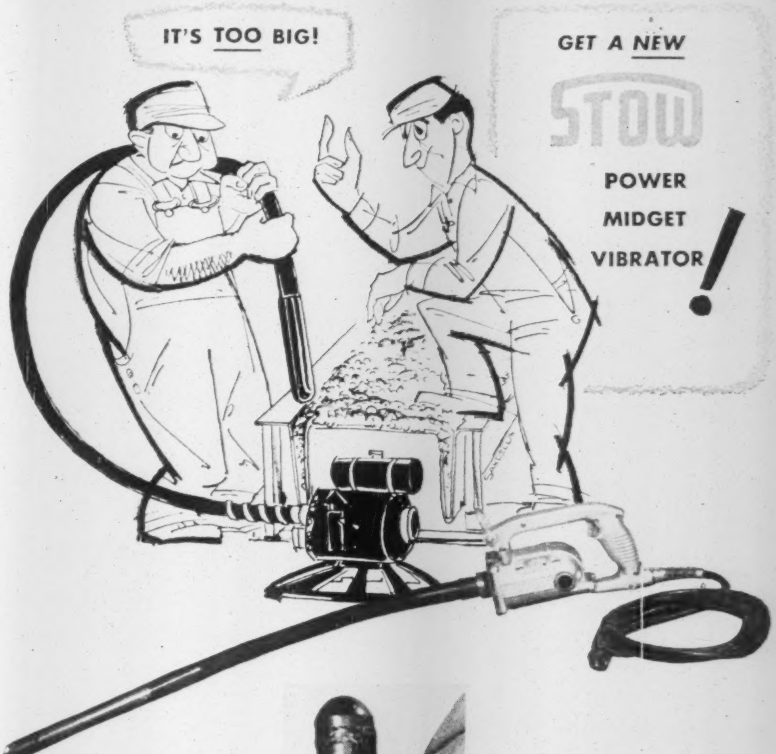
William D. Bailey, formerly an assooociate of Seelye, Stevenson, Value & Knecht, consulting engineers, New York City, has been admitted to partnership with the firm.

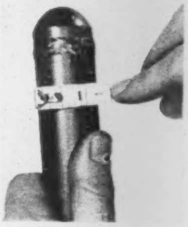
Joseph J. Hulfield has been named vice president of the reorganized A. M. Strauss and Associates, Inc., Fort Wayne, Ind., architectural and engineering firm.

Rear Admiral **Selman S. Bowling,** U. S. N. Ret., has been named general manager of Texcrete Co., Corpus Christi, Tex., a division of Texas Industries, Inc. The Corpus Christi firm produces concrete building materials.

William R. Hawley, architect, has become a partner in the architectural

THE CASE OF THE NARROW CONCRETE FORMS





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firm of Albert Sigal, Jr., and Milton F. Johnson, Palo Alto, Calif. The firm's new name is Sigal, Johnson & Hawley.

Richard M. Adler, formerly airport architect at the Port of New York Authority on the Terminal City Project at New York International Airport, has entered private practice in partnership with **Peter S. Hopf,** architect, a former member of the Port Authority staff. The firm of Hopf & Adler, architects, will specialize in air terminal facilities and similar industrial installations.

John Niles and **Rollie D. Conneil** have organized Plateau Engineering Co., Riverton, Wyo.

Lawrence A. DuBose is newly appointed director of engineering, Testing Service Corp., Lombard, Ill. He holds a doctorate in civil engineering from A. & M. College of Texas, where he spent nine years in teaching and research work at the Texas Experiment Station prior to becoming associate professor of civil engineering at the University of Alabama in 1956.

Bennett H. Griffin, recently retired as director of the Washington National Airport, Washington, D. C., has joined consultants Howard, Needles, Tammen & Bergendoff as special aviation consultant. His headquarters will be in the firm's office at Miami International Airport, Fla.

Rochester & Goodell Engineers, Inc., Salem, Ill., has made **Warren B. Godell** chairman of the board and named new officers of the corporation. They are: **Frank M. Rochester,** president; **Col. Warren Heilig,** vice president and general manager; **Howard Bateman,** vice president and highway consultant; **Earl Moldovan,** secretary and chief engineer; and **William Spain,** treasurer and office engineer.

Charles H. Mottier, vice president in charge of engineering, Illinois Central Railroad, retired April 30. He had been with the railroad for 47 years and was its engineering vice president for the last 13. He graduated from the University of Illinois with a civil engineering degree in 1910, and received his professional C. E. degree in 1923. Major projects of the Illinois Central in which he played important roles include the development of air rights at Chicago, New Orleans consolidated rail terminal, and renewal of the 3,888 ft long, 9-span, single track bridge over the Ohio River at Cairo, Ill.

Jack L. Staunton has announced opening of a consulting office, civil and hydraulic engineering, in New York City. He was formerly an associate in the firm of Seelye, Stevenson, Value & Knecht.

Obituaries

James H. Dugan, 72, retired civil engineer, died May 11 in Albany, N. Y. A graduate of Rensselaer Polytechnic Institute, Mr. Dugan was regarded as an expert on vehicular tunnels. While with the Port of New York Authority he helped with the design and construction of both the Holland and Lincoln Tunnels. Later, with the Triboro Bridge and Tunnel Authority, he served as chief design engineer for the Queens Midtown Tunnel, and he initiated the design of the Brooklyn-Battery Tunnel.

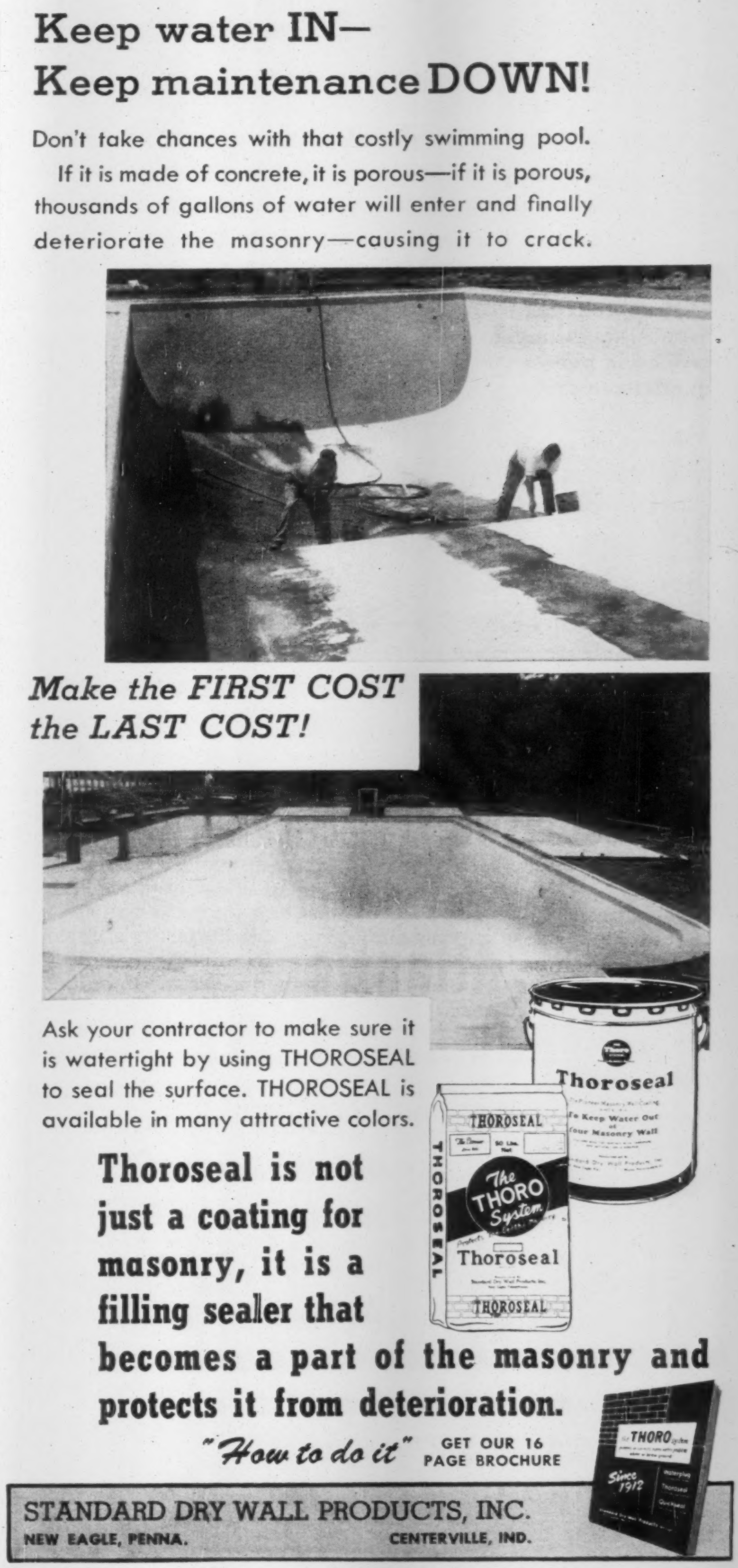
Everett W. Wilson, 76, civil engineer, died May 16 in East Orange, N. J. A graduate of Johns Hopkins University, he assisted in construction of railroads in Iran, Russia and Mexico early in his career. Later, he erected U. S. Military bases in Brazil and participated in construction of atomic plant installations at Oak Ridge, Tenn. For 30 years prior to retirement nine years ago, he had practiced civil engineering in Asheville, N. C.

Adolph B. Harr, 65, partner until last year in Harr & Horton Construction Co., died May 9 in Portland, Ore. A civil engineering graduate of the University of Washington, he spent many years on construction projects in Cuba and Czechoslovakia. From 1940 to 1943, he was in charge of construction of several large defense projects in the Puget Sound area. In 1943, he was commissioned in the U. S. Navy and served as commander of the 8th Special Seabee Battalion.

Henry W. Preston, 88, died May 13 in Pittsfield, Mass. An 1892 graduate of Union College, he was retired from American Bridge Co.

William D. Clarke, 78, civil engineer, died April 28 in Portland, Ore. During his career, he was a construction engineer for the Western Pacific Railroad, a consultant in the Portland area, and for 13 years was a division engineer for the Oregon State Highway Commission.

Robert E. Barnwell, 77, vice president, Lockwood Greene Engineers, Spartanburg, S. C., died February 27. A graduate of the College of Charleston, S. C., Mr. Barnwell was associated with Lockwood Greene for 50 years. His work included construction of industrial and textile projects, as well as military posts in the South, where he was in charge of all design, engineering and construction.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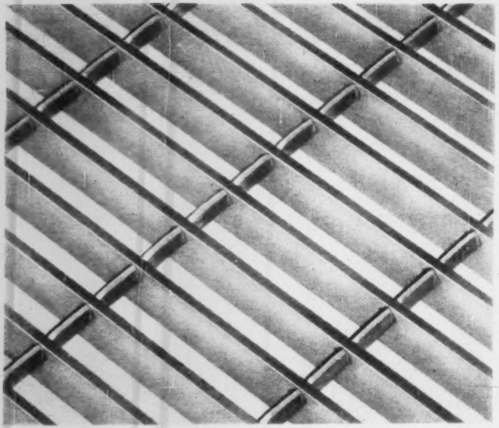

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- All sizes—3/4" x 1/8" to 2 1/4" x 3/16".
- Standard mesh with main bars on 1-3/16" centers and close mesh with main bars on .915 centers with cross bars on 4" or 2" centers.
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Books

Elementary Law

CONTRACTS, SPECIFICATIONS AND LAW FOR ENGINEERS—By Clarence W. Dunham and Robert D. Young. 550 pp. McGraw-Hill Book Co., Inc., New York, Toronto, London. $7.50.

Intended to be useful to architects and engineers, as well as to students, this book explains legal principles in simple terms. It doesn't try to "teach" law but to create an awareness and appreciation of situations in which a knowledge of law is helpful. It should enable a reader to recognize the occasions when he needs a lawyer's aid and to cooperate intelligently with the attorneys he engages.

The book is divided into three parts. Following an introductory chapter dealing with the concept of responsibility in the construction industry and a second chapter on the basic divisions of law and the courts, Part 1 explains the principles of the law of contracts. Part 2 shows how the principles can be applied to construction contracts and discusses preparation of specifications and other contract documents. Part 3 covers various fields of law of interest to architects and engineers, including partnerships, corporation and expert witnesses.

A valuable feature of the book is a glossary of legal terms at the back. This is particularly useful because of the necessity of discussing some of the terms in the early parts of the book, before there is an opportunity to define them fully.

As is usual in a book of this type, many references to court cases have been included. In addition, examples drawn from actual construction contracts and engineering practice are used to clarify points under discussion.

How to Stop the Shakes

DYNAMIC INSTABILITY—By Y. Rocard (translated from the French by M. L. Meyer). 227 pp. Frederick Ungar Publishing Co., New York, N.Y. $9.50.

An excellent treatment of the instability problem of suspension bridges under wind loads can be found in this book, which covers the general subject of dynamic instability.

The text starts with simple theory—harmonic oscillations—and proceeds gradually into advanced subjects. In addition to instability of suspension bridges, it also deals with directional stability of automobiles and critical speeds of aircraft wings.

The treatment of suspension bridges has two objectives: (1) to predict and delimit the range of wind speeds that inevitably produce and maintain vibrations of restricted amplitudes and (2) to calculate the critical speed of wind beyond which oscillatory instability is bound to arise and will always cause fracture. These are attained in studies of the response of bridges to various methods of excitation. The effects of structural damping are taken into account.

Also included is a discussion of possible improvements to bridges of unusual design and numerical calculations for critical wind speed for the Tacoma Narrows Bridge, which collapsed in 1940.

Concrete Text Revised

Design of Concrete Structures—Sixth Edition, by L. C. Urquhart, C. E. O'Rourke and George Winter. 546 pp. McGraw-Hill Book Co., Inc., New York, Toronto, London. $8.

The most important change in this well-known textbook on concrete design is the addition of a section on ultimate-strength design. The presentation is in accordance with the latest revision of the American Concrete Institute Code.

In ultimate-strength design, the capacity of a member to carry load up to the verge of failure is computed. The design load is obtained by applying a factor of safety to the ultimate capacity. This book not only develops the ultimate-strength equations but also presents design aids for applying them.

Other changes in the book reflect changes in the ACI code-design of eccentrically loaded columns, diagonal tension and flat slabs, to mention only a few.

Reports and Pamphlets

Handbook of Noise Control—Edited by Cyril M. Harris. McGraw-Hill Book Co., 330 W. 42nd St., New York 36. $16.50.

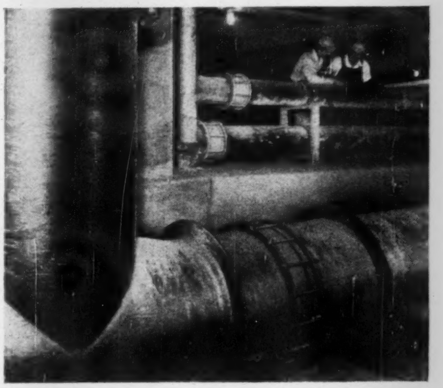
Symposium on Full-Scale Tests on House Structures—Special Technical Publication No. 210. 60 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3. To members $1.85; non-members $2.50.

Symposiums on Seismic and Shock Loading Glued Laminated and Other Constructions—Special Technical Publication No. 209. 85 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3. To members $2.00; non-members $2.75

Proceedings of the Sixth Annual Water Symposium—Bulletin No. 59. Engineering Experiment Station, Louisiana State University, Baton Rouge 3, La. $1.75.

Some Results of the Snow Survey of Canada—National Research Council of Canada, Ottawa, Canada. 25¢.

Joining pipe the Dresser way...

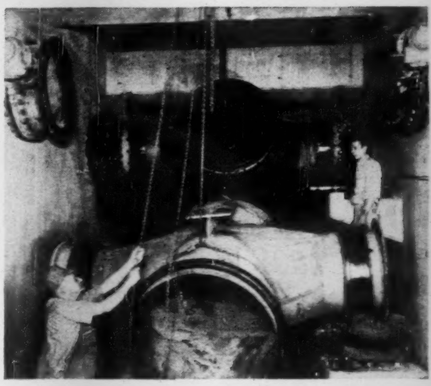


***Always* the easy way...**

The 8-inch, 10-inch and 30-inch Dresser-Coupled lines illustrated here are part of the system used in servicing the Clague Road's advanced rapid-sand type filters.

often the only way!

This battery of steel crosses is in the new Clague Road Filtration Plant, designed by Havens and Emerson, Cleveland, Ohio. The Plant will carry a normal flow of 50-million gpd. Contractor: Hunkin-Conkey Construction Company.



Dresser® Couplings provide the essential leeway for bolting up cross flanges to valves in tight spots. They'll take deviation caused by settling concrete and remain bottle-tight . . . permanently! Dresser's vibration-proof properties protect valves and other expensive equipment, and protect the pipelines, too. With a Dresser Coupling, two man-minutes per bolt gives you a permanent, leakproof joint that absorbs expansion-contraction movement, keeps maintenance problems to a minimum, and makes repairs easier if and when they do become necessary.

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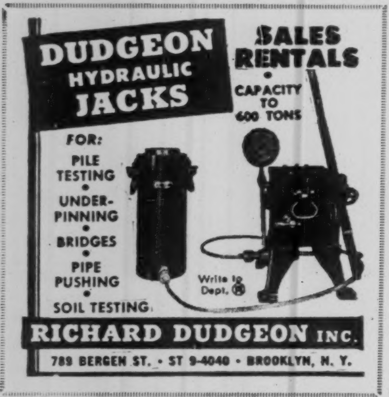

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Unit Prices

Bidding Battle on Virginia Bridge

Award goes to prestressed concrete despite firm supplemental bid on steel maintenance

The over-all differential in favor of steel was $15,000 on this $678,000 bridge, parking overlook and roadway. On the bridge alone, the steel alternate was $33,000 under the prestressed concrete price of $594,000, which took the contract. This was after the losing low bidder had made a firm bid of $15,000 to cover steel maintenance for the next 20 years, and had pointed out that prestressed concrete, too, requires maintenance.

A 100 ft span is involved over the James River, on a 0.753 mile stretch of Blue Ridge Parkway. The Bureau of Public Works made the award as directed by the National Park Service.

Government set wage minimums include: tractor operators, $1.375; crane and shovel operators, $2.08; structural iron workers, $3.10; carpenters, $1.94; cement masons, $1.475; rodmen, $1.45; common laborers, $1.10. Union specified wages include: tractor operators, $1.95; carpenters, $2.30; shovel and crane operators, $2.50; common laborers, $1.20.

This is how the bidding shaped up:

	Bid Standing	Triangle Constr. Co.	Bid Standing	Agnew-Joseph Co.
Roadwork	3C	$84,029	8	$101,948
Bridge				
steel alt	5	629,260	1	561,034
prestressed concrete	1C	593,985	2	640,506
Combination				
with steel	5	713,288	1	662,982
prestressed concrete	1C	678,014	2	742,454

Road Work

1	Case Constr. Corp., Mt. Airy, Md	$62,714
2	C. F. Rule Constr. Co., No. Nashville, Tenn	73,215
3C	Triangle Constr. Co., Silver Spring, Md	84,029
8	Agnew-Joseph Co., Ronceverte, W. Va	101,948
14	Terry Contracting, Inc., New York City	164,480

Bids: 1-23-58 Items	Unit	Quantity	Unit Prices 1	 3C
Clear & grub	ac	5	$500.00	$360.00
Exc, uncl	cy	40,000	0.60	0.55
old asph	cy	1,200	1.00	1.75
borrow, case 2	cy	25,000	0.50	1.10
structural	cy	350	5.00	3.60
Overhaul	stay	150,000	0.01	0.006
Cr aggr base place	cy	1,200	2.00	4.50
grav C-1	t	2,500	2.55	4.80
Masonry, cl B	cy	12	125.00	84.00
RC culv pipe, 18"	lf	200	6.00	5.40
24"	lf	100	8.00	8.40
Culv pipe, salvaged, remove, clear & relay	lf	132	2.00	4.80
Inlets	ea	4	500.00	110.00
Conc covers	ea	4	50.00	90.00
Topsoil place	cy	1,150	1.50	1.45
Seeding	unit	280	10.00	18.00

Steel Superstructure

1	Agnew Joseph Co., Ronceverte, W. Va	$561,034
2	T. A. Loving & Co., Goldsboro, N. C.	576,338
14	Nello L. Teer, Durham, N. C	888,238

Bids: 1-23-58 Items	Unit	Quantity	Unit Prices 1	 2
Exc, struct, bridge	cy	4,550	$13.00	$8.00
Conc, cl A	cy	2,870	65.00	54.50
cl S	cy	100	46.50	30.00
Steel, reinforcing	lb	208,000	0.13	0.15
struct, superstructure	ls	job	265,944	331,633
Aluminum bridge railing	lf	2,080	7.50	8.00
Conduit, fiber or metal, 4"	lf	1,050	2.00	1.00

Prestressed Concrete Superstructure

1C	Triangle Constr. Co., Silver Spring, Md	$593,985
2	Agnew Joseph Co., Ronceverte, W. Va	640,506
8	Nellow L. Teer Co., Durham, N. C	937,908

Bids: 1-23-58 Items	Unit	Quantity	Unit Prices 1C	 2
Struct exc, bridge	cy	4,550	$25.50	$13.00
Conc, cl A	cy	3,070	54.00	65.00
cl S	cy	100	38.00	46.50
prestressed superstruct	ls	job	259,900	327,606
Steel, reinforcing	lb	245,000	0.138	0.13
Aluminum bridge railing	lf	2,080	6.75	7.50
Conduit, fiber or met, 4"	lf	1,060	0.60	2.00

Replacement Sewer District of Columbia

Vinton Construction Co., with a bid of $5.50 a cu yd for 800 bd of excavation, was low bidder out of five on the combined system replacement sewer, 1st St., N. E., between Constitution and Maryland Aves., Washington, D.C. This $17,828 award by the District of Columbia, Department of Sanitary Engineering, was 26.5% below the engineer's estimate.

The contractor furnishes all materials except brick manhole frames and covers. Truck, rail and water transportation are available.

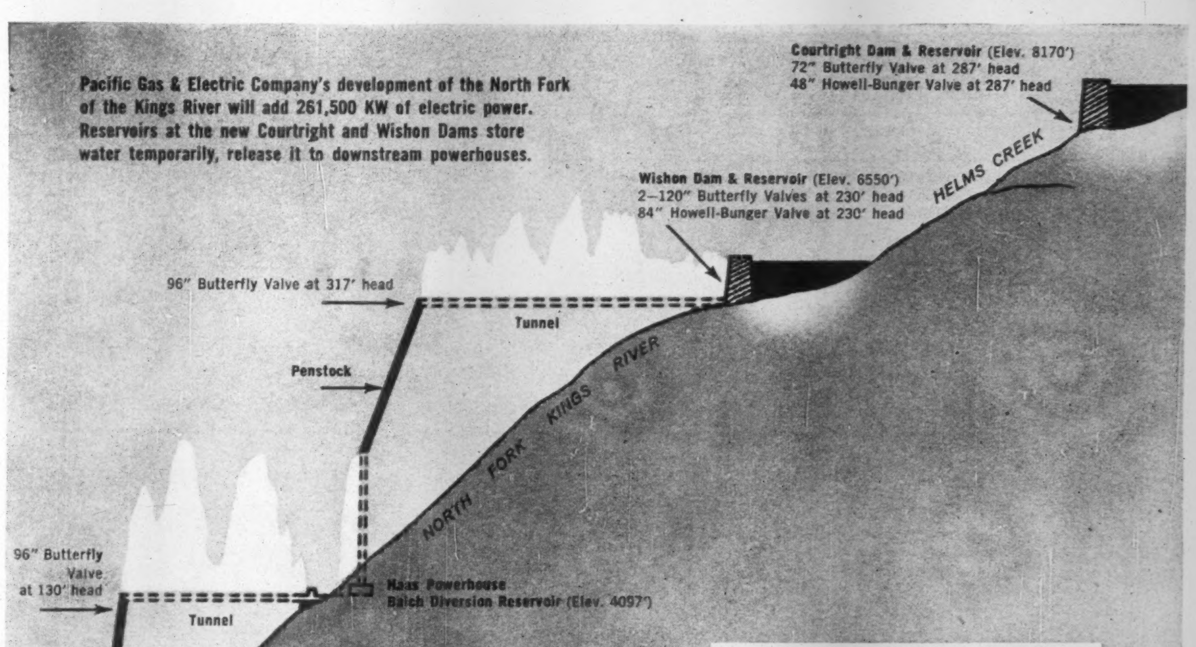
Wages prevailing in the District on sewer jobs include: carpenters, $3.295; bottom men, $2.225; pipe layers, $2.325; shorers, $2.325; wagon drillers, $2.525; power shovel operators, $3.55; trenching machine operators, $3.25-$3.35; bulldozer operators, $2.95; timbermen, $2.425; common laborers, $2.175.

The bidding went like this:

1C	Vinton Constr. Co., Silver Springs, Md	$17,828
2	The M. Cain Co., Inc., Washington, D.C.	21,137
6	W. Harvey Hatch Co.	36,595
EE	Dept. of Sanitary Engineering, D.C.	14,095

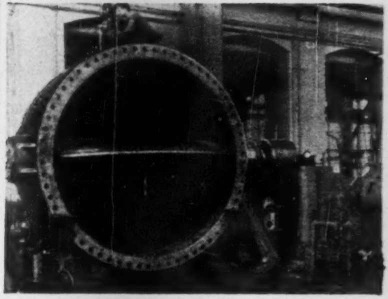
Bids: 3-24-58 Items	Unit	Quantity	Unit Prices 1C	 2
Excavation	cy	800	$5.50	$16.00
Sewer brick masonry	cy	5	90.00	80.00
Pipe sewer, RCC, 36"	lf	260	37.55	18.00
TC, 18"	lf	20	25.00	5.00
Outside sanitary control	vlf	4	20.00	15.00
Std basin, abandon & rebld	ls	job	400.00	650.00
MH base, RC masonry, BB	ls	job	1,200	1,350
Subgrade gravel foundation	t	3	5.00	9.00
Bracing lumber	Mbft	5	100.00	100.00
Borrow excavation	cy	80	4.00	4.00
House laterals, reconnect	ea	2	100.00	125.00

vlf vertical lin ft.



Pacific Gas & Electric Company's development of the North Fork of the Kings River will add 261,500 KW of electric power. Reservoirs at the new Courtright and Wishon Dams store water temporarily, release it to downstream powerhouses.

Courtright Dam & Reservoir (Elev. 8170')
72" Butterfly Valve at 287' head
48" Howell-Bunger Valve at 287' head
HELMS CREEK
Wishon Dam & Reservoir (Elev. 6550')
2—120" Butterfly Valves at 230' head
84" Howell-Bunger Valve at 230' head
96" Butterfly Valve at 317' head
Tunnel
Penstock
NORTH FORK KINGS RIVER
96" Butterfly Valve at 130' head
Haas Powerhouse
Balch Diversion Reservoir (Elev. 4097')
Tunnel
Penstock
Balch Powerhouse & Afterbay (Elev. 1703')



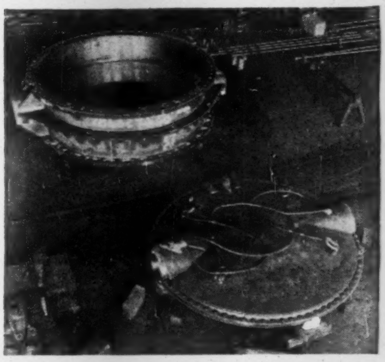
During shop tests, the 96-inch valve for Haas tunnel demonstrates the streamlined construction of SMS welded steel plate discs. This reduces head loss and turbulence to a minimum.

Kings River Project installs SMS valves

Five SMS Butterfly Valves and two SMS Howell-Bunger Valves are being installed by Pacific Gas & Electric Company on its Kings River hydropower project in the Sierra and Sequoia National Forests. They will control the flow of water from upstream reservoirs to the powerhouses in this $80 million system.

Seals on SMS Butterfly Valves cut leakage to a minimum. Disc and body seals are adjustable from either inside or outside, as specified. Specially-developed SMS trunnion seals are essentially drop-tight. Welded discs and housings assure freedom from the defects of cast materials, and permit more economical construction.

SMS Butterfly Valves have been designed and built in diameters up to 18 feet, and for service with operating heads up to 750 feet. To obtain information on SMS hydraulic turbines, valves and other accessories, write to S. Morgan Smith Company, York, Penna.



One of the 120-inch Wishon Reservoir valves on the SMS assembly floor shows adjustable seals on the discs and recess for the renewable seal ring within the body.

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AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED, TORONTO

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Materials and Labor Prices Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, May 22; Next, Jun. 19
- Clay Products, Lime, Plaster, Paint, Roofing: Last, May 29; Next, Jun. 26
- Wage Rates, Building Board, Lath, Insulation: Last, May 29; Next, Jul. 3
- Cement, Aggregate, Ready-Mixed Concrete, Asphalt: Last, Jun. 5; Next, Jul. 10

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.275	$5.10	$5.425	$12.25	......	$110.50	$130.00	$6.975	$9.75	$6.60	......
Chicago Area	5.275	5.10	5.425	12.25	$6.225	110.50	130.00	6.975	9.75	6.60	......
Pittsburgh Area	5.275	5.10	5.425	12.25	6.225	110.50	130.00	6.975	9.75	6.60	$14.75
Buffalo Area	5.275	5.10	5.425	12.25	6.225	110.50	130.00	6.975	9.75	6.60	14.75
Cleveland	......	......	5.425	12.25	6.225	......	......	......	......	......	14.75
Youngstown Area	......	......	5.425	......	......	......	......	......	9.75	......	......
Geneva	5.275	5.10	......	......	......	......	......	......	......	......	......
Los Angeles	5.975	......	6.125	......	6.225	......	......	......	9.75	6.75	......
Pueblo	......	......	......	......	......	......	......	69.75	9.75	6.60	......

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	EXPANDED METAL LATHk Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	EXPANDED METAL LATHk Std. ribbed 3.4 lb.
Atlanta	$9.05	9.25	$9.01t	$52.00	$59.00
Baltimore	9.45	8.45j	....	42.00	46.50
Birmingham	8.64y	8.60y	8.60y	57.00p	63.00p
Boston	9.63a	8.25	8.25	46.50	51.00
Chicago	8.79E	6.88½/6.91gu	6.91gu	52.00‡	53.00‡
Cincinnati	9.18ak	9.08rv	....	43.50mn	48.00mn
Cleveland	9.01	6.89c	....	44.50‡	49.00‡
Dallas	9.25	7.75	7.75	44.00	48.50
Denver	9.84	8.95c	....	57.00n	63.00n
Detroit	9.18	7.15g	....	45.00	49.50
Kansas City	9.31a	8.10	....	49.00	60.00
Los Angeles	8.50fdR	7.35	....	57.00	63.00
Minneapolis	9.08d	9.26b	9.26b	42.50	46.00
Montreal	7.90–8.60iC/8.20–8.90A	7.00/7.50FG	7.00/7.50FG	67.50h	70.20h
New Orleans	....	8.00gks	....	47.00	52.00
New York	9.45‡s	8.35y	8.35y	50.50n	57.00no
Philadelphia	8.80/9.00	7.80/8.00	....	42.50‡	47.00‡
Pittsburgh	8.64y	7.10y	....	46.00‡w	49.50‡w
St. Louis	9.10s	8.45c	8.45c	61.00l	62.00l
San Francisco	9.50	9.45j	....	51.00	55.00
Seattle	9.80sD	8.85e	....	63.50nr	68.00nr
Toronto	8.85*	7.85	7.85	60.00nq	66.00nq

Structural shapes: Quantity extras; per cwt: under 100#; +$9; 100-399#, +$6; 400-999#; +3.50; 1000-1999#; +1.00; 2000-4999#, base price; 5000-9999#; −10¢; 10,000-19,999#; −30¢; 20,000-29,999#; −50¢; 30,000# and up; −70¢

Reinforcing bars: EXTRAS, per cwt—♦Quantity (applies to LCL shipments only): under 1,000#, +$1.80; 1000-1999#, +$1.50; 2000-4999#, +$1.20; 5000-9999#, +90¢; 10,000-19,999#, +60¢; 20,000-29,999#, +30¢; 30,000-39,999#, +10¢; 40,000# & up, none. ♦Size†: #2 +$2.50; #3 +$1.40; #4 +$1.00; #5 +70¢; #6, #7, #8, #9, #10, #11 +50¢. ♦Bending: heavy, +90¢; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). ♦Engineering (details and placing from designs by others): over 500 tons, +45¢; 200–499 tons, +50¢ but not over $4500; 75–199 tons, +65¢ but not over $2000; 20–74 tons, +75¢ but not over $975; 5–19 tons, +85¢ but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +60¢.

WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill

4 × 16 in., No. 5 & 10 wires—
Joliet, Ill., Donora, Pa., Monessen, Pa $3.08

4 × 12 in., No. 8 & 12 wires—
Joliet, Ill., Donora, Pa., Monessen, Pa $3.62

6 × 6 in., No. 6 & 6 wires—
Joliet, Ill., Donora, Pa., Monessen, Pa $4.17

•‡ Delivered. •* Aver. of Canadian & American. •a 2000–9999# •b 10,000–15,999#, fob city •c 20 tons or over •d 10,000–19,999# •e Intermediate struct'l •f Incl. delivering in free zone •g CL •h list price; dominion tax exempt; add provincial and municipal taxes •i add dominion, provincial and municipal sales taxes •j intermediate and hard grade •k fob city •l delivered; contractor to do unloading •m copper alloy •n LCL •o asphalt coated •p del. of 500 sq. yd. or more. •q 3 lb •r 2% off for cash •s 2,000–4,999# •t add 16.5¢ del. •u add 7.5¢ switch •v incl 15¢ del. •w truck lots. •y add 15¢ del. •z add 10¢ del. •A American made. •C Canadian made. •D ½% for cash. •E 30,000 or over. • F Federal tax exempt. •G add 10¢ switch. •R: revised

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C.I. PIPE PRICE INDEXa	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city 6" Press Cl. 150	ASBESTOS CEMENT PIPE 6" Press Cl. 1500	ASBESTOS CEMENT PIPE 12" Sew Cl. 2400	CLAY SEWER PIPE Per ft., delivered ASTM C13-54 8 in.	CLAY SEWER PIPE ASTM C13-54 12 in.	CLAY SEWER PIPE ASTM C200-55T 24 in.	CLAY SEWER PIPE ASTM C200-55T 36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTM C4-55 6 in.	CLAY DRAIN TILE† ASTM C4-55 8 in.	CONCRETE SEWER PIPE§ Per ft., delivered ASTMC 14-55 12 in.	CONCRETE SEWER PIPE§ ASTMC 14-55 24 in.
Atlanta	130.5	$1.56/1.64	$2.36	2.68	$.53	$.98	$....	$....	$209.00s	$334.00	$1.55m	$4.40m
Baltimore	140.4	1.56/1.64	2.19	2.54	.665	1.28	5.08r	12.71	187.80	289.20	1.01	2.75m
Birmingham	125.8	1.56/1.64	2.26	2.62	.46	.86	3.70w	10.37w	260.00‡	440.00‡	1.25m	2.75
Boston	143.5	1.58/1.66	2.19	2.54	.763qrt	1.4715qrt	6.075qrt		215.40r	330.60r	1.56mg	3.47mg
Chicago	140.9	1.56/1.64	2.19	2.54	.93m	1.78m	7.52m	21.16m	220.00n	330.00n	1.30	4.00
Cincinnati	135.5	1.58/1.66	2.19	2.54	.665t	1.2825t	4.905t	12.505	240.00	370.00	.85m	3.25m
Cleveland	141.7	1.58/1.66	2.19	2.54	.567s	1.0935s	4.545t	11.7875t	155.40m	240.60m	.85m	3.50m
Dallas	137.8	1.58/1.66	2.26	2.62	.537	.955	4.382b	9.72b	......	......	1.17	2.52
Denver	148.2	1.79/1.73	2.36	2.68	.45n	.87n	3.73n				.75m	2.75m
Detroit	142.1	1.58/1.66	2.19	2.54	.90n	1.70n	6.80n	18.50n	164.80m	254.20m	1.10	4.05
Kansas City	138.5	1.60/1.66	2.26	2.62	.61	1.105	5.694b	13.08	278.00	493.00	.95	2.90
Los Angeles	148.6	1.65/1.73	2.19	2.54	.74bl	1.61bl	6.42bl	15.36bl	370.00l	530.00l	1.12	3.32f
Minneapolis	149.9	1.60/1.68	2.26	2.62	.86mo	1.55mo	6.70mo		......	......	2.13h	5.74h
Montreal					1.13u *	2.00u	7.50u	13.50u	288.00	545.00	1.17h	3.11j
New Orleans	133.3	1.56/1.64	2.26	2.62	.528	.983	5.10	.....	210.50p	468.00	.85	2.90
New York	138.7	1.58/1.66	2.19	2.54	1.02	1.94	7.56	19.48			1.50	3.00
Philadelphia	138.0	1.56/1.64	2.19	2.54	.68	1.31	5.13r	14.25r	300.00‡	350.00‡	1.75h	4.20h
Pittsburgh	142.9	1.58/1.66	2.19	2.54	.595m	1.15m	4.73m	12.40m	190.00	295.00	1.66z	3.93z
St. Louis	136.9	1.56/1.64	2.26	2.62	.59	1.08	4.45	10.80	180.00l	380.00l	1.45il	3.10hl
San Francisco	148.6	1.65/1.73	2.19	2.54	.78d	1.69d	6.72d	16.36d	320.00l	560.00l	1.05m	3.30m
Seattle	149.0	1.65/1.73	2.19	2.54	.72b	1.50b	6.84	.....	255.00c		1.95ky	4.75ky
Toronto	.....	....	....	....	.80	1.50	6.00	.....	157.00	280.00	.92	3.21

•WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

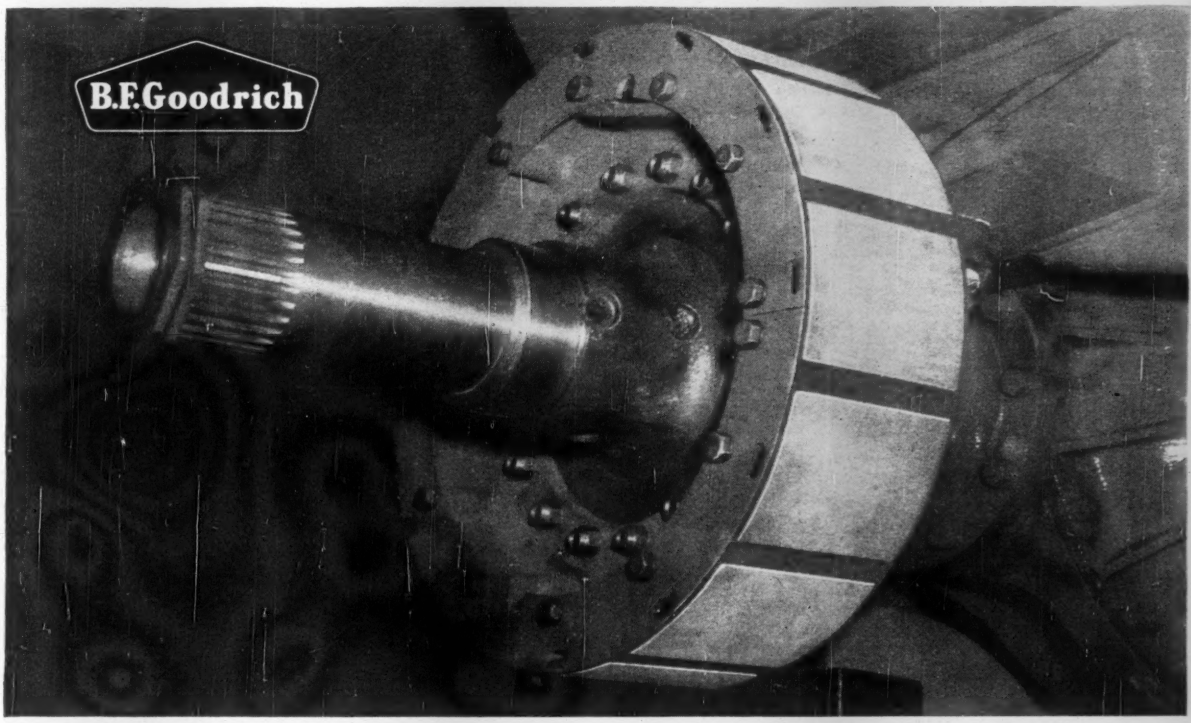
Mill	2½ & 3 in., Butt Weld+ Black %	2½ & 3 in., Butt Weld+ Galv. %	3½ to 6 in., Lap Weld+ Black %	3½ to 6 in., Lap Weld+ Galv. %
Lorain, Ohio	16.75	0.50	....	....
Aliquippa, Pa	16.75	3.00	6.25a	+8.00a
Sparrows Pt., Md.	14.75	1.50	.......†	.........†
Benwood, W. Va	16.75	0.50	....	....
Youngstown, O.	16.75	0.50	6.25	+10.50a
Indiana Harbor, Ind.	15.75	0.50	5.25ab	+11.50a
Sharon, Pa.	16.75	0.50	....	....
Wheatland, Pa	16.75	0.50	6.25a	+10.50a
Etna, Pa	16.75	3.00	4.50d	+9.75d
Fontana, Calif.	3.25	+13.00	+7.25ab	+24.00ab

+Threaded and coupled. a 3½ to 4 in. b Continuous weld. 5 and 6 in. d 6 in. † Production discontinued

•† Extra quality •‡ delivered. •a PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. •b Extra strength. •c 4-in., $130. •d SS361-A •f 21 in. •g culvert pipe; reinf., ASTM C 75-56 •h reinf., ASTM C 75-54 •i reinf., ASTM C 76-55 •j centrispun; no standard specs. in Canada. •k 2% cash •l fob plant •m truck del. •n LCL del., fob truck •o listed price based on LCL (no min.) •p freight allowed to destination in city •q ASTM C 13-40 •r CL fob origin, freight allowed •s 1 ft lengths •t 3 ft lengths •u CESA A 60-1941 •v standard strength •w SS; add 20% for d.s. •x fob city •y Reinforced

• WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft.(*based on approx. $200 per net ton): Butt Weld ⅛ in., 5½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. Lap Weld 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight, 3% transport tax for destination price. † Production discontinued November 1957

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld—1 in. black, + 65.54, galv., + 95.77; 1¼ in. black, + 65.54, galv. + 95.23, 1½ in. black, + 61.79 galv. + 91.22; Lap Weld —2½ in. to 3 in. black + 67.95 galv. + 95.77; 4½ in. to 6 in. black + 64.74 galv. + 90.68 Add freight rates plus 3% transportation tax to get destination price.



The *only* off-road brake with *full circle stopping power*

Tests prove the B.F.Goodrich Hi-Torque Brake can stop your heavy equipment faster, safer!

Tractor-Scraper Test	B. F. Goodrich Hi-Torque	Conventional two-shoe brake
Stopping distance	41′ 9″	72′
Speed	14.83 mph	15.17 mph
Load	heaped	heaped

Two identical tractors and scrapers were used for this test. Unit fitted with B. F. Goodrich Brakes stopped almost twice as fast as unit using regular production brakes.

Off-Highway Truck Test	B. F. Goodrich Hi-Torque	Conventional two-shoe brake
Deceleration rate	18 Ft/sec ^{2}	7 Ft/sec ^{2}
Speed	25 mph	25 mph
Gross vehicle weight	112,000 lbs.	112,000 lbs.
Wheel condition	sliding	rotating

Popular 24-ton capacity off-highway truck with original production brakes was run over test course. Immediately after fitting the same vehicle with B. F. Goodrich Brakes, the truck made the same run again, stopping almost *two and a half times* as fast.

For more information on how the B. F. Goodrich Hi-Torque Brake can help your equipment operate more safely, more dependably, write B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Troy, Ohio.

B.F.Goodrich Hi-Torque brakes

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Mass., Falmouth**—OPERATIONAL FACILITIES, etc.—BA 6/19—U. S. Eng., 150 Causeway St., Boston, operational apron and taxiways, hydrants, jet fueling facilities and wash rack at Otis Air Force Base, ENG-19-016-58-173. $2,250,000-$2,500,000. Plans deposit $15. Charles A. Maguire & Assoc., Turks Head Bldg., Providence, R. I., engrs. CD 5/23.

▲† **Me., Bangor**—AIRFIELD PAVEMENTS, etc.—BA On Or About 6/24—U. S. Army Eng. Area Office, 562 Congress St., Portland, airfield pavements (FY 58), alert facilities at Dow Air Force Base, ENG-19-016-58-182. $2,500,000-$3,000,000. Plans deposit $10. CD 9/17.

▲† **Mass., Winthrop**—MISSILE MASTER FACILITY—BA On Or About 6/26—U. S. Army Eng. Area Office, 187 Westminster St., Providence, R. I., constr. missile master facility at Fort Heath, ENG-19-016-58-190. $1,000,000-$1,500,000. Plans deposit $50.

BUILDINGS—BA

▲† **Mass., Ayer**—BARRACKS, etc.—BA 6/25—U. S. Eng., 150 Causeway St., Boston, barracks, messes, administration and supply bldgs. at Fort Devens, ENG-19-016-58-178. $3,000,000-$4,000,000. Plans deposit $25. Linenthal & Becker, 16 Lincoln St., Boston, archts. CD 5/27.

BUILDINGS—SLC

▲ **Mass., West Concord**—SHOP, etc.—General Radio Co., 22 Baker Ave., soon lets contract Industrial Bldg. addn., off Baker Ave. $1,250,000. Anthony Soakeeny, 552 Massachusetts Ave., Cambridge, structural engr. CD 4/7.

HEAVY CONSTRUCTION—LB & CA

▲ **RHODE ISLAND**—State R. I. & Prov. Plants, Div. Purchase, State House, Providence, Bids opened 5/28,
M. A. Gammino Constr. Co., 28 Valley St., Providence, R. I. LB **$3,537,062**, est. $3,200,000, Contr. 5806 F.A. Proj. No. U-306 (3) Huntington Expressway (Roberts Expressway to Reservoir Ave.) Providence and Cranston. CD 5/13.

BUILDINGS—LB & CA

▲ **Alberthaw Constr. Co.**, 60 State St., Boston, Mass., CA Est. **$2,250,000**, LABORATORY, Rte. 128, BURLINGTON, MASS. Cabot, Cabot & Forbes, 60 State St., Boston, Mass. Raytheon Mfg. Co., Microwave & Power Tube Div., Foundry St., Waltham, Mass., lessee. CD 6/2.

▲ **Neri Constr. Co.**, 131 Main St., Millbury, Mass., LB **$1,229,940**, 100 unit low-rent HOUSING, Fitch Rd., CLINTON, MASS. Town, Housing Auth., 242 Church St., Clinton, Mass. Bids May 28. CD 5/5.

▲† **Beacon Constr. Co.**, 102 Hano St., Allston, Mass., LB (I) **$5,750,000** (II) **$9,555,522**, FAMILY HOUSING at Otis Air Force Base, ENG-19-016-58-157, FALMOUTH, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. Bids May 27. CD 5/7.

▲ **White Constr. Co.**, 376 Boylston St., Boston, Mass., CA **$1,734,800**, JUNIOR HIGH SCHOOL, off Burlington and Adams St., LEXINGTON, MASS. Town, supt. Schools, 1475 Massachusetts Ave., Lexington, Mass. Bids May 2. CD 5/8, under LB.

▲ **Lilly Constr. Co.**, 110 Western Ave., Allston, Mass., CA Est. **$1,000,000**, Goldfarb LIBRARY, on Campus, WALTHAM, MASS. Brandeis University, 415 South St., Waltham, Mass. Bids May 16. CD 4/25.

▲ **Reed Homes, Inc.**, R.F.D. No. 1, Box 6, Unionville, Conn. Owner Builds. **$2,270,000**, 227 HOUSES, George Washington Turnpike, second section of expanded project, UNIONVILLE, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲† **Labrador**—DORMITORIES, etc.—BA 6/24—U. S. Eng., Eastern Ocean Dist., c/o Defence Constr. (1951) Limited, Room No. 4 Temporary Bldg. 56, Lyon St., Ottawa, Ont., constr. 2 story rein.-con. concrete block Readiness crew bldg., two 3 story rein. concr. frame Civilian Dormitories, and 2 one story steel frame shop bldgs. with concrete block walls at Goose Air Force Base, Goose Bay, ENG-30-347-58-13, $2,500,000. CD 5/1.

▲† **Newfoundland, Stephenville**—AIR BASE IMPRVS.—BA 6/24—U. S. Eng., Eastern Ocean Dist., c/o Defence Constr. (1951) Ltd. Room 4, Temporary Bldg., 65 Lyon St., Ottawa, Ont., 1 story, steel frame with cavity walls of concrete masonry units and brick, Air Passenger Terminal, incl. 1 story Power Equipment Shop Bldg., of steel frame with concrete block walls; 1 story squadron Bldg.; 1 story Operation Mission Training Bldg.; 2 story Readiness Crew Bldg.; 1 story Readiness Aircraft Shelter, at E. Harmon Air Force Base, ENG-30-347-58-14, $2,000,000, CD 3/12.

BUILDINGS—BA

▲ **N. Y., Uniondale**—SCHOOL—BA 6/17—Bd. Educ., Uniondale School Dist. (U. F. S. D. 2), Town of Hempstead, Uniondale High School, Uniondale, Lawrence Road Junior High School, Milburn Ave. $2,000,000. Frederic P. Wiedersum Assocs., 65 Roosevelt Ave., Valley Stream, N. Y., archts. CD 12/26.

▲ **N. Y., Brooklyn**—UNDERGROUND GARAGE—BA 6/25—Dpt. P. Wks., Municipal Bldg., New York Zone 7, underground parking garage, Adams, Jay, Johnson and Willoughby Sts., for Department of Traffic. $3,500,000. CD 3/25/47.

HEAVY CONSTRUCTION—LB & CA

▲ **Fruin-Colnon & C. C. Constr. Co.**, 1706 Olive St., St. Louis, Mo., LB **$3,756,624** est. $3,250,000 (3 bidders), Sturgeon Point Filtration Plant and Pumping Station, BUFFALO, N. Y. Erie County Water Authority, Ellicott Square Bldg., 295 Main St., Buffalo 3, N. Y. Bids May 27. CD 4/15.

▲ **Turner Constr. Co.**, 150 East 42nd St., New York 17, N. Y., CA Est. **$4,500,000**, 140,000 sq. ft. aircraft maintenance base at New York International Airport for Seaboard & Western Airlines, IDLEWILD, N. Y. Port of New York Authority, 111 Eighth Ave., New York 17, N. Y. CD 2/25/53.

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg, Bids opened 5/29,
Pa.—**F. A. Canuso & Sons, Inc.**, 173 W. Roosevelt Blvd., Phila. 20, Pa. LB **$2,665,021** (7 bidders) 4,403 ft. concrete, steel viaduct with divided roadway 26 ft. each side divisor. Section Schuylkill Expressway University Ave. Bridge 34th and Tasker Sts. (Proj. 8221) FAI, Phila., Phila. Co.;
Pa.—**Brayman Constr. Co.**, 2 Canterbury Rd., Pittsburgh 2, Pa. LB **$1,500,753** (19 bidders) parallel bridges, concrete deck steel truss and I-beam spanning Six Mile Creek on Erie Thruway, 809 ft. (Proj. 806-1) FAI Harborcreek Twp., Erie Co. CD 5/13.

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,
Allegheny Contracting Industries, Inc., 801 Bingham St., Pittsburgh, Pa. CA **$4,388,813** constr. two 26,824 ft. divided hy. rein.-con. 24 ft. wide each side medial area 7 grade separations section Erie Thruway (Proj. 804-1) Summit, Greene and Miller Creek Twps., FAI, Erie Co. Bids May 9, awarded May 29. CD 5/14, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 5/29,
Pa.—**Lipsett, Inc.**, 209 N. 22nd St., Phila. 3, Pa. and **Booth & Flinn Co.**, 1942 Forbes St., Pittsburgh 19, Pa. LB **$1,672,979** (8 bidders) (joint venture) constr. 2,050 ft. divided hy. c. conc. with bit. surf. variable in width, one 2 span plate girder bridge. L.R. 67047 (3) on Aramingo and Harbison Aves., Phila., Phila. Co.;
Pa.—**General Asphalt Paving Co. of Phila.**, 6851 Rising Sun Ave., Phila. 11, Pa. LB **$749,731** (6 bidders) constr. 4,328 ft. divided hy. c. conc. with bit. surf. variable in width. Spring Garden St. between Penna. Ave. and Broad St., Phila., Phila. Co.;
Pa.—**Gasparini Excavating Co., Inc.**, 1439 Main St., Peckville, Pa. LB **$547,966** (14 bidders) constr. 4,668 ft. course aggreg. base with bit. surf. 22 ft. and variable in width; 3 bridges. T.R. 90, Stroud Twp., Monroe Co. CD 5/13.

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg.
Pa.—**Frank Mashuda Co., Frank Mashuda Co., Inc.,** and **Mashuda Constr. Co.**, Evans City, Pa. LB **$4,608,891** (7 bidders) constr. 51,393 ft. divided hy. of rein.-conc. each side divisor, 6 bridges, Ebensburg By-pass, T. R. 22-52 (Proj. 711-1) Jackson and Cambria Twps., Cambria Co.; LB **$3,457,702** (4 bidders) constr. 25,500 ft. divided hy. of rein.-conc. 24 ft. wide, each side divisor 2 pairs of bridges, Proj. 807-1) FAI Section Erie Thruway, Harborcreek, Greenfield and North East Twps., Erie Co.;
Pa.—**S. J. Groves & Sons Co.**, Box 8, East Springfield, Pa. LB **$3,103,247** (5 bidders) 15,391 ft. divided hy. of rein.-conc. each side, divisor, 3 bridges, section Erie Thruway, Proj. 805-1) FAI, Mill Creek, Greene and Harbor Twps., Erie Co. CD 5/13.

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,
James D. Morrissey Inc., 9119 Frankford Ave., Phila. 14, Pa. CA **$5,164,309**, 27,140 ft. divided hy. c. conc. 24 ft. wide each sided divisor 3 bridges, 6 grade separations, T. R. 611 Section Stroudsburg By pass (Proj. 817-1) Delaware Water Gap, East Stroudsburg, and Stroudsburg Boros, Smithfield Twp., Monroe Co. Bids May 9, awarded May 29. CD 5/14, under LB.

▲ **Laub Constr. Co., Inc.**, 1405 Locust St., Phila., Pa. CA **$1,084,724**, Bid 2009 Torresdale Filter Plant, concrete conduit and appurtenances work, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids May 6. CD 5/19, under LB.

▲ **M&L Constr. Co.**, 108 S. 40th St., Phila., Pa. LB **$1,166,227** general constr. Bids 3286-3291 Northwest Incinerator Plant, Umbria St. and Domino Lane, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids May 20. CD 4/16.

BUILDINGS—LB & CA

▲ **Dean Constr. Co., Inc.**, 29-28 41 Ave., Long Island City, N. Y., CA **$3,849,480**, general contract SENIOR HIGH SCHOOL, WHITE PLAINS, N. Y. Bd. Educ., 279 Hamilton Ave., White Plains, N. Y. Bids Apr. 7. Grand total $6,359,921. CD 5/5, under CA;
Philip Plumbing Co., 142 Brook St., Scarsdale, N. Y., CA **$556,900**, plumbing (White Plains, N. Y.);
Heating Maintenance Corp. of New York, 220 E. 138th St., New York 51, N. Y., CA **$957,000**, heating (White Plains, N. Y.)
Whiffen Elec. Co., Inc. & RAO Electrical Equipment Co., Inc., 84 Martine Ave., White Plains, N. Y., (joint venture), CA **$996,541**, electrical work (White Plains, N. Y.)

† **Wildberger Best Constr. Co., Inc.**, 2025 E. North Ave., Baltimore, Md., LB **$1,995,832** (4 bidders), BARRACKS. ENG-18-020-58-19, ABERDEEN PROVING GROUND, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, Md. CD 3/13.

▲ **Baltimore Contractors, Inc.**, 711 South Central Ave., Baltimore, Md., LB **$1,094,000** (6 bidders), MEDICAL SCIENCES LIBRARY, for University of Maryland, BALTIMORE, MD. State, Dpt. P. Imprvts., 506 Park Ave., Baltimore 1, Md. Bids May 22. CD 5/30/56.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **N.C., Cherry Point**—AIR STATION IMPRVS.—BA 6/24—Dist. P. Wks. Office, Fifth Naval Dist., Naval Base, Norfolk, 11, Va., fueling facilities, paving and utilities, Marine Corps Air Station, NBy 15369, Spec. 15369/58. Over $1,000,000. CD 9/17.

HEAVY CONSTRUCTION—LB & CA

▲† **T. A. Loving**, Wachorvia Bank Bldg., Goldsboro, N. C., LB **$1,629,985** (10 bidders) four Squadron Administration Shop and Hangar Bldgs., Marine Corps Air Station, NBy 15364, Spec. 15364/58, CHERRY POINT, N. C. Dist. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids May 29. CD 5/2.

▲† **William E. Arnold**, 666 Dyal St., Jacksonville, Fla., and **Wiley N. Jackson Co.**, Box 1408, Roanoke, Va. (joint venture), CA **$3,396,700**, Ammunition Storage Facility, U. S. Naval Magazine, Yellow Water, NBy

13953, Spec. 13953/57, FLORIDA, Dist. P. Wks. Office, 6 Naval Dist. Bldg. 13, Charleston, S. C. Bids May 21. CD 5/27, under LB.

▲ **FLORIDA**—State Rd. Dpt., Tallahassee, Bids opened May 27,

Fla.—**Cone Bros. Contr. Co.**, Box 1259, Tampa 1, Fla. LB **$152,010**, est. $200,000 (4 bidders) heavy excavation, 4.867 mi. constr. 45 ft. bridge of concrete slab deck on prestressed composite concrete and steel pile bends, from SR 29 at Miles City east. Proj. Job. No. 0363-150, SR S-838, Collier Co.; LB **$681,141**, est. $650,000 (6 bidders) heavy excavation 2.284 mi. SR 45 and 780 (US 41) between point near Coon Key around Sarasota Bay Front (Ringling Causeway) and Washing. Blvd. in City of Sarasota; Type 1 b. conc. surf. course and binder course; resurfacing existing pavement with types I and II b. conc., constr. 120 ft. concrete deck bridge on prestressed composite concrete and steel pile bents, drainage structures, FAP No. U-011-2 (40) Job. No. 1702-206, Sarasota Co.; LB **$1,128,868**, est. $950,000 (8 bidders) rock base with Type 1 b. conc. surf. and binder course, drainage structures; 2.976 mi. SR 50 between Governors Ave. and Tampa Ave. (West of Orlando) Fed. Aid Proj. DF-022-2 (15), Job. No. 7505-601, Orange Co.;

Fla.—**S. M. Wall Co.**, 1650 NE 23rd Blvd., Gainesville, Fla., LB **$389,752**, est. $225,000 (2 bidders) limerock base, primed; Types 2 and 3 surf. treatment, 60,000 sq. yds, storm sewers, roads and parking areas at University of Florida. State Proj. No. 2649-130, Alachua Co.; LB **$1,294,195**, est. $1,600,000 (7 bidders) rock base primed, Type 1, b. conc. surf. course and binder course, one 90 ft. concrete slab deck bridge on concrete pile bents; 7 concrete box culverts of bridge length, 11.098 mi. SR 200 (US 301) between point in Starke and the Clay Co. line. Fed. Aid Proj. F-008-1 (2), Job. No. 2801 201, Bradford Co.;

Fla.—**C. T. Stockton, Inc.**, Box 1235, Hialeah, Fla., LB **$863,763**, est. $1,000,000 (4 bidders) rock base with Type 1 b. conc. surf. course and binder course, 3.337 mi. between the north city limits of Delray Beach, and Boynton Beach. Fed. Aid Proj. QF-003-3 (25) Job. No. 9301-601 SR (US 1), Palm Beach Co.;

Fla.—**Ray Constr. Co.**, Box 1789, Pensacola, Fla., LB **$469,905**, est. $325,000 (5 bidders) sand-clay base, primed Type 2 surf. treatment, 5.929 mi. SR S-289-A (Fairfield Dr.) from SR 292 to SR 10-A, State Proj. 4855-152, Escambia Co. CD 5/16.

▲ **H & F Eng. Co., Inc.**, Box 823, Gulfport, Miss. CA **$3,627,284**, imprvs., extensions to water distr. sys. and sewerage sys. involving 240,000 lin. ft. sanitary sewers and laterals, 9 sewage ejector stations, 25,000 ft. sewer force main; 60,000 lin. ft. water line, 3,000 new meters, relocated existing water lines, etc., BILOXI, MISS. City, Laz Quave, mayor, City Hall, Biloxi, Miss. Albert Switzer & Assoc., Box 9686 Northside Sta., Jackson, Miss., engrs. Bids May 1.

BUILDINGS—LB & CA

▲ **Arlington County Manager's Office**, Courthouse, Arlington, Va., rejected bids May 13. constr. COUNTY COURTHOUSE, ARLINGTON, VA. LB $2,260,053. Will re-advertise. CD 5/16, under LB.

▲ **A. G. Higginbotham Co.**, Chase National Bank Bldg., Charleston, W. Va., LB **$1,307,000**, GERIATRICS BLDG., at Huntington State Hospital, HUNTINGTON, W. VA. Dpt. Mental Health, Charleston 5, W. Va., Bids May 27, CD 4/28.

▲ **Batson-Cook Co.**, 1102 Independent Life Bldg., Box 4973, Jacksonville, Fla., CA **$2,075,000**, RETAIL STORE, Water and Hogan Sts., JACKSONVILLE, FLA. Sears Roebuck & Co., 675 Ponce De Leon Ave. NE., Atlanta, Ga. Bids Apr. 22, awarded May 20, CD 5/1, under LB.

▲† **Procurement Officer, Lake Charles Air Force Base**, Lake Charles, La., rejected bids June 4, 300 units Capehart HOUSING at Lake Charles Air Force Base, LAKE CHARLES, LA. CD 5/21, Will re-advertise.

▲ **Barksdale & LeBlanc**, Box 167, Baton Rouge, La., CA **$2,065,385**, Unit A-three WOMEN'S DORMITORIES, and Unit B-UNION BUILDING for Southern University of Louisiana, SCOTLANDVILLE, LA. Louisiana State Bd. Educ., Baton Rouge, La. Bids May 20. CD 4/30.

▲† **H. K. Ferguson Co.**, 1783 E. 11th St., Cleveland 14, O. CA 2 year contract for misc. plant constr., OAK RIDGE, TENN. U. S. Atomic Energy Comn., P. O. Box E, Area Constr. Div., Oak Ridge, Tenn. CD 11/27/53.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Toledo**—GRAIN ELEVATORS—BA 6/16—Toledo-Lucas County Port Authority, 241 Superior St., provide grain facilities on Site No. 1 at Middlegrounds on west bank of Maumee River, elevator with capacity of 2 to 5 million bu.; Site No. 2: at Middlegrounds area, elevator with approx. 2 million up to 5 million bu. capacity; Site No. 4: on Presque Isle, on east bank near mouth of Maumee River, grain elevator from 2 to 5 million bushels. CD 4/30, under LB.

BUILDINGS—BA

▲ **Ill., Chicago**—MEDICAL—BA 6/20—City, City Hall, 3 story, bsmnt. brick, Medical Bldg. (House of Correction), 28th and California Ave. $1,000,000. CD 5/31/57.

HEAVY CONSTRUCTION—LB & CA

▲† **S. J. Groves & Sons Co.**, Wesley Temple Bldg., Minneapolis, Minn., LB **$6,566,258**, est. $7,164,748 (4 bidders) 1,400 ft. earth-fill Dam for Dillon Reservoir Project on Licking River, CIVENG-46-022-58-47, OHIO. U. S. Eng. Room 201, Cabell Co. Courthouse, 4th Ave. and 8th St., Huntington, W. Va. Bids May 28, CD 4/24.

▲ **Merritt-Chapman & Scott Corp.**, Standard Bldg., Cleveland 13, O., CA **$2,077,438**, est. $1,500,000-$2,000,000. Plan A: site preparation for Pier at W. 6th St., CLEVELAND, O. City, Dpt. Port Control, Wm. J. Rogers, dir., City Hall, Cleveland 14, O. Bids May 15, awarded May 28. CD 5/20, under LB.

▲† **W. Timmons Co.**, 7211 New Germany Rd., Dayton, O., LB **$1,260,722**, est. $1,454,035, officers quarters, Wright-Patterson Air Force Base, ENG-15-029-58-56, DAYTON, O. U. S. Eng., 830 W. Broadway, Louisville, Ky. Bids May 28. CD 4/28.

▲† **Roan Salvage Co.**, Sturgeon Bay, Wis., CA **$1,399,000** rubble mound breakwater constr. and dredging, Harbor of Refuge, Harrisville, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. CD 9/9.

BUILDINGS—LB & CA

▲ **Frank Messer & Sons, Inc.**, Paddock Rd., Cincinnati, O., LB **$1,618,778** (10 bidders) 136-unit, 2 story, bsmntless, brick veneer, HOUSING, Suter Ave., CINCINNATI, O. Cincinnati Metropolitan Housing Auth., 595 Armory St., Cincinnati, O. Bids May 28. CD 5/28.

▲ **John W. Galbreath & Co.**, 42 E. Gay St., Columbus, O., Owner Builds, **$7,500,000**, 660 one story, HOMES. HILLIARD, O.

▲ **Gallenstein Bros.**, 25 Cemetery Rd., Milford, O., Own Forces, **$1,500,000**, SHOPPING CENTER, US 50 36, Clermont Co., MILFORD, O. Betz & Bankemper, 319 Scott St., Covington, Ky., archts. Awarded May 29. CD 7/9/56.

▲† **Sumner Sollitt Co.**, 307 North Michigan Ave., Chicago, Ill., CA **$19,857,000**, (3 bidders) constr. addnl. BLDGS. and UTILITIES at Veterans Administration N. P. HOSPITAL, DOWNEY, ILL. Veterans Admin., Munitions Bldg., Wash., D. C., Bids May 13, CD 5/16, under LB.

▲ **Mercury Builders, Inc.**, 761 S. Harlem, Forest Park, Ill., CA **$1,220,116**, 1 and 2 story, brick, West Side JUNIOR HIGH SCHOOL, McLean Blvd., Demmand Ave., Melrose and Oakley Ave., ELGIN, ILL. Elgin Bd. Educ., 353 E. Chicago, Elgin, Ill. Bids May 15, CD 5/23, under LB.

▲ **Herlihy-Mid-Continent Co.**, 135 S. LaSalle, Chicago, Ill., CA **$1,735,000**, general contract COUNTY BLDG. and JAIL, MUSKEGON, MICH. Bd. Supervs. Muskegon Co. Eugene R. Bergerson, clk., Muskegon, Mich. Bids May 1, CD 5/19, under LB.

Port City Plumbing & Heating Co., 119½ Myrtle Ave., Muskegon, Mich., CA **$558,968**, mechanical work (Muskegon, Mich.)

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† **Missouri**—NIKE SITES—BA 6/18—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. 4 Nike sites, each (1) 3 underground storage structures (2) two generator bldgs. (3) 1 ready bldg. (4) corridors (5) 3 elevated platforms (6) assembly and test bldg. (7) housing (a) NCO quarters, officers, quarters, administration mess hall in vicinity of St. Louis, ENG-11-032-58-95. $4,000,000.

▲† **Kansas**—BA On Or About 6/26—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. relief well sys., levees, appurtenances, WW unit, at Topeka, CIVENG-23-028-58-124. CD 9/10.

▲† **Missouri**—NIKE HERCULES MISSILE—BA On Or About 6/26—U. S. Eng., 1800 Federal Office Bldg., 911 Walnut, Kansas City 6, Mo., nike-hercules missile area, 3 underground rein.-con. missile storage structures; refueling pit, missile assembly bldg., 2 electric generator bldgs., personnel ready bldg., administration recreation and storage bldg., mess hall, 2 combine NCO and OQ, roads, parking in vicinity of Kansas City, ENG-23-028-58-77. Over $4,000,000. Plans deposit $52. (Correction—location of project). CD 5/22, under Kansas.

▲ **Iowa, Burlington**—BA 7/1—City, City Council, City Hall, sewage treatment plant, primary sedimentation-type 9.5 MGD capacity, two new sewage pumping stations, intercepting sewers and force mains, etc. $2,000,000, Plans deposit $90 treatment plant, $25 pumping stations and $25 sewers, Extended date, Consoer, Townsend & Assocs., 360 E. Grand Ave., Chicago II, Ill., consult. engrs., CD 3/16.

BUILDINGS—BA

▲ **Tex., Port Neches**—SCHOOL—BA 6/25—Groves Independent School Dist., D. T. Carver, supt., 1000 Merriman St., Junior High School, Groves, $1,250,000. Plans deposit $25. Caudill, Rowlett Scott & Assocs., 425 S. Main St., Bryan, archts.

BUILDINGS—SLC

▲ **Iowa, Cedar Rapids**—HOSPITAL—St. Luke's Methodist Hospital, H. A. Palmer, secy, soon lets contract 6 story, bsmnt. hospital addn. $2,000,000, Ellerbe & Co., E. 505 First Nat'l. Bank Bldg., St. Paul, Minn., archts. CD 4/30.

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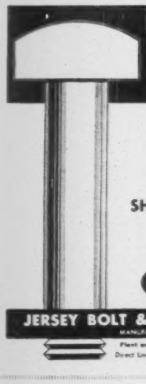

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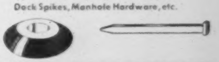

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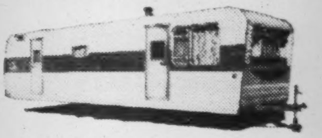

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HEAVY CONSTRUCTION—LB & CA

▲ **Zenith Dredge Co.**, Fourteenth Ave. West and Railroad St., Duluth, Minn., CA **$2,695,462**, constr. land development involving 6,000 ft. wall bulkhead (sheet piling) and dredging 1,000,000 cu. yd., DULUTH, MINN. Duluth Port Auth., 909 Alworth Bldg., R. T. Smith, port dir., Duluth, Minn. Bids May 16. CD 5/21, under LB.

▲ **Ashbach Constr. Co.**, 1910 West County Rd. C, St. Paul, Minn., CA **$2,578,570**, Contr. No. 2, furnish materials and construct about 41,739 lin. ft. 60 in. concrete water conduit from Mississippi River Station to Pleasant Lake, ST. PAUL, MINN. City, O. P. Simon, Jr., purch. agt., 253 City Hall, St. Paul, Minn. Bids Feb. 4. CD 2/10, under LB.

▲† **O. J. Eickhof & Sons Co.**, Box 477, Crookston, Minn., CA **$1,289,555**, Schedule 11, general constr. ordnance storage at Air Force Base, Inv. ENG-25-066-58-1, GRAND FORKS, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 9/17.

▲† **Peter Kiewit Sons Constr.** 613 9th St., Rapid City, S. D. CA **$2,879,531** runway, paving, landing strip, barrier and operations apron, Ellsworth Air Force Base, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. CD 5/2, under LB.

▲† **Peter Kiewit Sons' Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb., CA **$2,186,768**, strengthening Northwest-Southeast Runway, Offutt Air Force Base, ENG-25-066-58-126, FORT CROOK, NEB. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids About May 7. CD 4/3.

▲ **KANSAS**—State Hy. Comn., State Office Bldg., Topeka, Bids opened 5/22,

Kan.—**Brown Brothers Constr.**, Box 228, Manhattan, Kan. and **Welliever Constr. Co.**, Holton, Kan., LB **$308,363** (7 bidders), grading 8.926 mi. beginning at Marshall Nemaha County line; **thence east US-36 to** Seneca. Proj. 36-66-DF 092-4 (9), Nemaha Co.;

Kan.—**Koss Constr. Co.**, Pauline, Kan. LB **$1,324,900** (5 bidders), concrete paving 9.663 mi. beginning at Shawnee-Wabaunsee Co. line, thence easterly on addnl. lanes US-40 Interstate. SP 40-89 I 01-5 (32), Shawnee Co.; LB **$813,976** (5 bidders) c. conc. 5.853 mi. beginning at Wabaunsee Shanee Co. line, thence west on W. B. Lanes of US-40 Interstate. SP 40-00 I 01-5 (33), Wabaunsee Co. CD 5/10.

▲ **Panama-Williams Corp.**, Melrose Bldg., Houston, Tex. CA **$2,750,000** first portion of 78 mi. 30 in. pipe line between Port Arthur and Clean Lake near Houston, TEXAS. Humble Oil & Refining Co., 1210 Main St., Houston, Tex. (**Correction**—contractor). ENR 6/5.

▲† **Northwestern Eng. Co.**, Box 567, Denver 1, Colo., CA **$1,827,542**, range instrumentation, roads, White Sands Proving Grounds, Inv. ENG-29-005-58-97, LAS CRUCES, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Apr. 28. CD 5/19, under LB.

BUILDINGS—LB & CA

▲† **C. H. Leavell & Co.**, 1900 Wyoming St., and **Dan R. Ponder, Inc.**, 327 Morgan Ave., El Paso, Tex. LB **$2,051,000** (1 bidder) joint venture. constr. 125 units Capehart HOUSING at William Beaumont Army Hospital, ENG-29-005-58-92, EL PASO, TEX. U. S Eng., Box 1538, Albuquerque, N. M. Bids May 28 CD 5/7.

▲ **W. S. Bellows Constr. Co.**, 716 N. Everton, Houston, Tex. CA Est. **$1,000,000** PLANT, site off Mykawa Rd., HOUSTON, TEX. DeVoe-Raynolds Co., 1321 McKinney St., Houston, Tex. CD 1/28.

▲ **Homecraft Builders**, 2116 Military Dr. N.W., San Antonio, Tex. CA **$1,896,500** Base Bid. 208 DWELLING UNITS in 87 Separate bldgs., Proj. Tex. 6-15, SAN ANTONIO, TEX. San Antonio Housing Auth., Marie McGuire, 400 Labor St., San Antonio, Tex. Bids Apr. 29. CD 5/7, under LB.

▲ **C. H. Leavell & Co.**, 1900 Wyoming, El Paso, Tex. LB **$6,859,000**, est. $8,209,000, 4 story 490,000 sq. ft. POSTAL ANNEX BLDG., DENVER, COLO. U. S Post Office Dpt., General Services Admin., 19th and F. Sts. N.W., Wash., D. C. Bids May 27. CD 4/1.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **Calif., March Air Force Base**—COMMUNICATIONS CENTER—BA 6/25—U. S. Eng., 751 S. Figueroa St., Los Angeles, constr. alternate communications center, ENG-04-353-58-102. $1,250,000. CD 9/19.

BUILDINGS—BA

▲ **Calif., San Francisco**—HOSPITAL—BA 6/24—St. Mary's Hospital, c/o Frank W. Trabucco, archt. 355 Stockton St., San Francisco, (selected list of bidders) type I rein-con. hospital addns. and remodeling addnl. 6th floor, recreation area, physical therapy room, etc. $1,800,000.

BUILDINGS—SLC

▲ **Calif., Los Angeles**—LIFE SCIENCE—Occidental College, 1600 Campus Rd., soon lets contract constr. rein.-brick life science bldg. $1,000,000.

HEAVY CONSTRUCTION—LB & CA

▲ **IDAHO**—State Hy. Dpt., Boise, Bids opened 5/27,

Eagle Constr. Co., 3200 Pleasanton Ave., Boise, Idaho, LB **$1,648,885**, grade, drain on 4-lane divided roadway on 20.75 mi., 26.33 ft. concrete overpass, 51.75 ft. concrete bridge, Interstate Hy. 82 and 82N, Cassia Co. CD 5/20.

▲† **W. H. Shields**, Box 3047, Eugene, Ore., CA **$1,924,384**, est. $2,025,812. masonry bldgs. totalling 100,306 sq. ft. for SAGE Support Facilities, Camp Adair Air Force Station, with utilities. ENG-45-108-58-89, CORVALLIS, ORE. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Apr. 24. CD 4/30, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento, Bids opened 5/28.

Fredrickson & Watson Constr. Co., and Ransome Co., 873 81st St., Oakland 3, Calif. LB **$2,617,777** (joint venture) (6 bidders) constr. 4 lane divided freeway U.S. 40 and 4 structures between 0.3 mi. west of Magra Overhead, 2 mi. west of Gold Run and ½ mi. west of Monte Vista, 111-Pla-37-C,D, Placer Co. CD 5/1.

▲† **Baldwin Contg. Co., Inc.**, P.O. Box 311, Marysville, Calif. LB **$1,814,000** est. $1,655,923 (4 bidders) 91,000 sq. ft. floor space with utilities composite structure, Spec. 2421, ENG-04-167-58-49, BEALE AIR FORCE BASE, CALIF. U.S. Eng., 1209 8th St., Sacramento, Calif. Bids May 28 CD 5/8.

▲† **Griffith Co.**, 1060 S. Broadway, Los Angeles, Calif. CA **$13,515,000** (1st increment) of Naval Air Station, 2 runways, 13,500 ft. long each, taxiways, sewage

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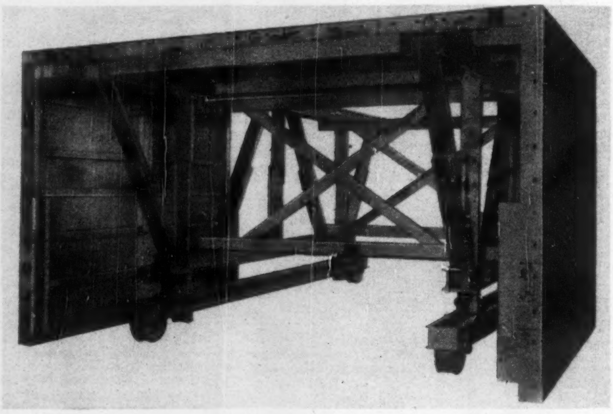

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utilities, etc. LE MOORE, CALIF. 12th Naval Dist., P. Wks. Office, San Bruno, Calif. Bids May 9, awarded May 22. CD 5/14, under LB.

BUILDINGS—LB & CA

▲ **Ebasco Services, Inc.**, 2 Rector St., New York 2, N. Y. CA Total cost **$29,000,000**. 230,000 kw. Ocotillo POWER PLANT, near TEMPE, ARIZ. Arizona Pub. Service Co., 501 S. 3 St., Phoenix, Ariz. CD 9/20/56.

▲ **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, and **L. Johnson**, 1266 Mercer St., Seattle, Wash., LB **$6,782,000**, (5 bidders), 21 story, steel frame and rein.-con. OFFICE BLDG., 5-level PARKING GARAGE and 3 story POSTOFFICE BLDG., Union St. between 3 and 4 Aves., SEATTLE, WASH. University Properties, Inc., White-Henry-Stuart Bldg., Seattle 1, Wash. Bids May 29. CD 5/22.

▲† **Todd Building Co.**, Roseburg, Ore., LB **$2,163,400**, 150 units Capehart Family HOUSING, Camp Adair, CORVALLIS, ORE. U. S. Air Force, Portland, International Airport, Portland, Ore. Bids May 22. CD 4/23.

▲ **Centinella Valley Union High School Dist.**, 365 Hawthorne Way, Hawthorne, Calif., rejected bids May 7 Lawndale HIGH SCHOOL, Inglewood Ave. near Compton Blvd., HAWTHORNE, CALIF. LB **$2,134,000**. Will re-advertise. CD 5/9, under LB.

▲ **Crown Constr. Co.**, 5059 W. Pico Blvd., Los Angeles, Calif. LB **$2,421,276** (7 bidders) constr. Columbus JUNIOR High SCHOOL, in Canoga Park, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids May 16. CD 4/18.

▲ **Lindgren & Swinerton, Inc.**, 1631 Beverly St., Los Angeles, Calif. CA **$2,268,950** general contract (7 bidders) 13 story, air-conditioned HEADQUARTERS bldg., Flower and 8th Sts., LOS ANGELES, CALIF. Southern Counties Gas Co., 810 S. Flower St., Los Angeles 17, Calif. Bids May 16. CD 4/29.

▲ **Tom E. Norcross**, 6053 Atlantic Ave., Long Beach, Calif. CA **$2,414,000** constr. CLASSROOM, LIBRARY, ADMINISTRATION and LABORATORY BLDGS. at Valley Jr. College, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro, St., Los Angeles, Calif. Bids May 2, awarded May 15. CD 5/6, under LB.

▲† **Dinwiddie Constr. Co.**, Crocker Bldg., San Francisco, Calif. CA **$5,748,000** constr. 513,600 sq. ft. addn. to Navy-Owned Polaris Development Facility at Lockheed Missile Sys. Division, SUNNYVALE, CALIF. Lockheed Aircraft Corp., P.O. Box 504, Sunnyvale, Calif. J. H. Pomeroy, Inc., 727 W. 7th St., Los Angeles, Calif., archt.-engr. CD 1/21/57.

CANADA

BUILDINGS—BA

▲ **Ont., Welland**—HOSPITAL—BA 6/25—Hospital Bd., J. F. Swayze, chn., 57 Main St. E., hospital, T-shaped rein.-con. frame, curtain walling for ground floor, brick and masonry above ground floor, 6 story patients' block, 3 story admin. bldg., delivery and operating rooms. $3,750,000. Agnew, Ludlow & Scott, 25 Merton St., Toronto, Ont., archts. Agnew, Craig & Peckham, 200 St. Clair Ave. W., Toronto, consultants. Hallsall & Dowdell, 752A Yonge St., Toronto, engrs. CD 5/15.

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria,

Windsor Constr. Ltd., 1603 W. 3rd Ave., Vancouver, B. C., LB **$1,192,777** (9 bidders) construct Oak St. Bridge, Deas Island section of Vancouver to Blaine Expressway Contr. 909, Deas Island Area.

▲ **Beaver Constr. Co.**, 6825 Clanranald Ave., Montreal, Que., CA **$1,384,070**, constr. sixth section of Decarie-Rainbault Collector Sewer, between Vezina St. and Queen Mary Rd., MONTREAL, QUE. City, City Hall, Montreal, Que. Bids Apr. 23, Awarded May 21, CD 4/30, under LB.

BUILDINGS—LB & CA

▲ **Keith Constr. Co. Ltd.**, 8 Parkdale Crescent, Calgary, Alta., CA EST. **$15,000,000**, 1500-HOUSE Haysboro DEVELOPMENT, 82nd and 97th Ave. S. W.; 250-HOUSES Chinook DEVELOPMENT, between 66th and 82nd Ave., CALGARY, ALTA. Kelwood Developments, 8 Parkdale Crescent, Calgary, Alta. Awarded May 22.

▲ **Ellis-Don Ltd.**, Box 852, London, Ont., CA Est. **$2,300,000**, 3 main PLANT BLDGS. one about 50,000 sq. ft. wood frame constr. and 2 bldgs. of about 30,000 and 4,000 sq. ft. structural steel frame constr. rein.-conc. fdns. concrete block and brick walls, GODERICH, ONT. Dominion Rock Salt Co., Oxford St., Goderich Ont. (subsidiary of Dominion Tar & Chemical Co. Ltd., Sun Life Bldg., Montreal Que.) Bids May 12, awarded May 23. CD 4/15.

▲ **Douglas Bremner Constr. Ltd.**, 5965 Monkland Ave., Montreal, Que., CA COMPRESSOR BLDG., part of an extension to increase the production capacity of Polyethlene by 12,000,000 lbs per year, MONTREAL, QUE. Union Carbide (Canada) Ltd., 1055 St. Leonard Rd., Montreal, division of Carbide Chemical Co., 1425 Mountain St., Montreal, Que.

▲ **E. G. M. Cape & Co. (1956) Ltd.**, 4898 Western Ave., Montreal, Que., CA Est. **$1,500,000**, BLEACH PLANT, RED ROCK, ONT. St. Lawrence Corp. Ltd., main office, Sun Life Bldg., Montreal, Que. H. A. Simons Ltd., 16 E. Hastings St., Vancouver, B. C. archts. CD 11/5/51.

▲ **Hilsden & Co. Ltd.**, Garnet and 12th Ave., Regina, Sask., CA **$1,252,480**, SCHOOL, REGINA, SASK. Rosemont Collegiate Institute, 1860 Lorne St., Regina, Sask. Bids May 6, Awarded May 21. CD 4/29.

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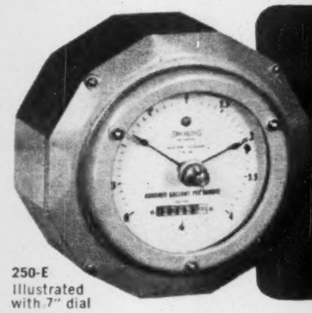

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ALASKA

HEAVY CONSTRUCTION—LB & CA

▲ Ramstad Constr. Co., Anchorage, Alaska, CA $1,233,000, est. $1,084,752, modify radar towers at Cape Newnham and Cape Romanzof, Inv. 58-52, ALASKA. U. S. Eng., Ancorage, Alaska. Bids May 20. CD 5/26, under LB.

U. S. POSSESSIONS

BUILDINGS—LB & CA

▲† E. E. Black Limited, P.O. No. 3203 Honolulu, Hawaii, Raber-Kief, Inc., 5939 4th Ave. S., Seattle, Wash. LB $19,754,100, est. $20,000,000 (7 bidders) 1,050 Capehart HOUSING units at Anderson Air Force Base, GUAM. Strategic Air Command, Maywood Air Force Depot, Los Angeles, Calif. Bids May 28. CD 4/30.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

Ark., Warren—City, Byron L. Herring, mayor, City Hall, voted $708,000 bonds, sewerage sys. imprvs. incl. sewage disposal plant, 6 pumping stations and force mains, interceptor and lateral sewers. A. E. Heagler, West Memphis, consult. engr.

▲ Calif., Ventura—Ventura Co., Courthouses, 501 Poll St., $1,200,000 bond election July 29 sewage treatment plant Santa Clara River on Ocean. Bennett Engr. Co., 621 E. Main St., Santa Paula, and Harry & John Jenks, 63 Crescent Dr., Palo Alto, consult. engrs.

▲ Ky., Florence—City, sewerage sys., disposal plant. $1,300,000. O. G. Loomis, 542 Greenup St., Covington, engr. CD 7/18.

▲ W. Va., Elkins—City, City Hall, sanitary sewers, $1,000,000. Bids later this summer. Settle Engineers, Inc., Peoples Bldg., Charleston, consult. engrs. CD 8/11/50.

W. Va., Weston—City, City Hall, sanitary sewer, $750,000. Bids soon. Settle Engineers, Inc., Peoples Bldg., Charleston, consult. engr. CD 5/15/47.

STREETS AND ROADS

▲ PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Luzerne Co.—imprv. 12 mi. Rte. 115 between Ricketts Glen and Rte. 309, $1,250,000.

4 lane Pittston By-Pass for Rte. 11, $800,000. Bids in fall.

Schuylkill Co.—imprv. State Rte. 45 between Shenandoah and Girardville, 5 mi., $1,500,000.

AIRPORTS

▲† Va., Chantilla—AIRPORT—Civil Aeronautics Authority, 16 St. and Constitution Ave. N.W., Wash., D. C., airport for Dist. of Columbia $12,500,000. Ammann & Whitney, 111 8th Ave., New York 11, N. Y., consult. engrs. in association with Burns & McDonnell, 95th and Troost Sts., Kansas City, Mo. Eero Saarinen, Bloomfield Hills, Mich. and Ellery Husted, 1508 19th St. N.W., Wash., D. C. CD 1/17.

▲ Que., Montreal (Dorval)—AIRPORT IMPRVS.—Dpt. Transport, Hunter Bldg., Ottawa, Ont., power and heating plant for terminal bldg. at Montreal Airport, Dorval. $1,150,000.

▲ Que., Montreal (Dorval)—AIRPORT IMPRVS.—Dpt. Transport, Hunter Bldg., Ottawa, Ont. dual airport runways, 10,000 ft. in length, each 200 ft. wide. $2,200,000.

AMERICANS ABROAD

† Eire, Dublin—EMBASSY BLDG.—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by John M. Johansen, 98 Main St., New Canaan, Conn., U. S. A. American Embassy Bldg. $750,000. Fred S. Dubin Assocs., 178 S. Whitney St., Hartford, Conn., U. S. A., consult. engrs. CD 4/24.

† Lebanon, Beirut—EMBASSY BLDG.—Dpt. State, Office of Foreign Bldgs., Wash., D. C., U. S. A., plans by Ralph Rapson, 720 Washington Ave. S.E., Minneapolis, Minn., U. S. A., American Embassy Bldg. $800,000. Fred S. Dubin Assocs., 178 S. Whitney St., Hartford, Conn., U. S. A., consult. engrs. CD 4/24.

PUBLIC BUILDINGS

▲ Calif., Azusa—SCHOOL—Azusa City School Dist., 340 W. 5th St., voted $1,240,000 bonds May 20 school constr. CD 3/4.

Calif., Covina—SCHOOL—Charter Oaks School Dist., 5427 N. Sunflower Ave., defeated bonds May 20 schools. $975,000. CD 4/4.

▲ Calif., Downey—SCHOOL—Alameda School Dist., 8613 E. Alameda St., defeated $1,292,000 bonds May 20 school imprvs. CD 3/6.

▲ Calif., Los Altos—JUNIOR COLLEGE—Foothill Junior College Dist., c/o Bd. Trustees, 176-2nd St., voted $10,400,000 bonds May 20, 400,000 sq. ft. college on 100 acre site. CD 2/27.

▲ Calif., Palos Verdes—SCHOOL—Palos Verdes School Dist., defeated $1,500,000 bonds, May 20, school constr. CD 3/4.

▲ Calif., Pico—SCHOOL—Ranchito School Dist., 9333 Lock Lomond, voted $750,000 bonds May 20, school constr. CD 3/4.

▲ Calif., Sacramento—OFFICE—State Employees Bldg. Corp., Fred A. Taylor, pres., Room 516, 1020 N. St., 4 story, 60,000 sq. ft. office bldg. for California State Employes Assn. and California State Employes Credit Union. $1,000,000. Bids In October.

▲ Conn., Madison—SCHOOL—Town, Town Hall, plans by Willard Wilkins, 945 Asylum Ave., Hartford, high school, Copse Rd., $1,000,000. CD 11/15.

▲ Conn., Meriden—INSTITUTE SCHOOL—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Walter Crabtree, Jr., 195 Fern St., West Hartford, Regional Technical Institute, $2,333,000. CD 3/29/56.

▲ Fla., Tampa—STATE UNIVERSITY IMPRVS.—Fla. State Bd. Control, J. B. Culpepper, Dr. John S. Allen, pres. of University of South Florida, Tallahassee, plans by Guy C. Fulton, Bldg. "E", Gainesville, Fla. archt. to Bd. of Control, University of Florida, and Robert M. Little, assoc. archt., 2180 Brickell Ave., Miami, classroom, College Union and cafeteria, $1,500,000; Library classroom Bldg. Temple Terrace, $1,400,000; classroom, office and administrative bldg., Temple Terrace, $1,400,000; Science Laboratory, Classrooms and Office Bldg., Temple Terrace, $927,400. Teaching Auditorium Theater, Temple Terrace, $400,000. CD 10/29.

▲ Ill., Chicago—AIR TERMINAL—Air Terminal Comn., 38 S. Dearborn St., Zone 3, 5 story, brick, glass air terminal bldg., E. of Chicago River between Monroe and Adams St. (2 below street level) $6,500,000. Ralph H. Burke & Co., 560 W. Higgins Rd., Park Ridge, Ill., consult. engrs.

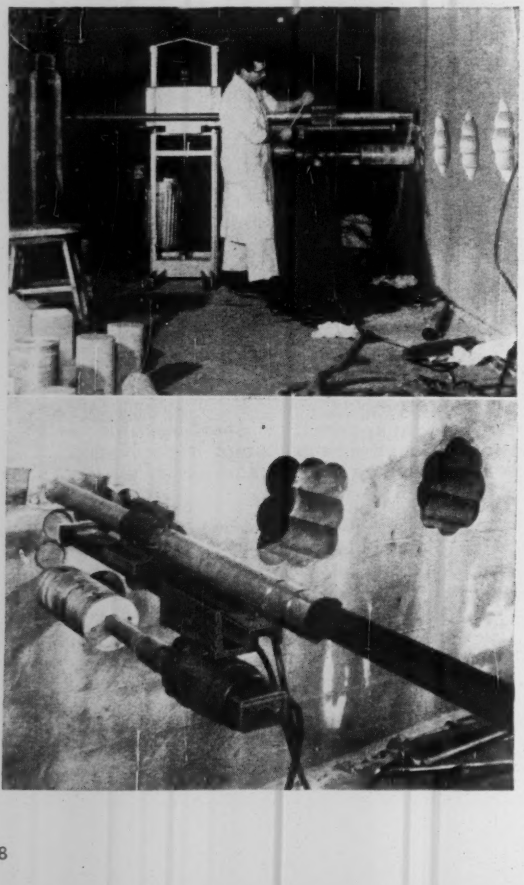
▲ Ill., Chicago—SCHOOLS—Chicago Bd. Educ., 228 N. LaSalle St., plans by Graham Anderson Probst & White, Inc., 201 N. Wells St., 2 story brick, elementary school, Monroe and Leavitt St. $1,575,000; plans by Raymond A. Peterson, 4014 Dempster St., Skokie, 2 story bsmnt., brick, elementary school, bounded by E. 44th St., Lake Park, Woodlawn and University Aves., $1,312,500; plans by Consoer & Morgan, 360 E. Grand Ave., Chicago, 2 story, brick Montefiore Social Adjustment School, 14th and Ashland Ave., $675,000. CD 6/11.

Ill., LaGrange—SCHOOL—School Dist. 102, Cossitt and Madison, plans by Jos. C. Llewellyn Co., 38 S. Dearborn St., Chicago, 1 and 2 story, brick grade school, Barnsdale Rd. $750,000.

▲ Ind., New Albany—SCHOOL—New Albany-Floyd Co. Cons. School Corp. Plans by Walker, Applegate, Oakes & Ritz, 218 Elsby Bldg., Junior High School, Cherry St. and Old Vincennes Rd. $1,500,000.

▲ Kan., Hutchinson—SCHOOL—Bd. Educ. plans by Mann & Co., archts.-engrs., 201 E. 1st St., high school. $2,200,000. Bids in Fall. CD 11/21/56.

Kan., Lawrence—STUDENTS UNION—University of Kansas, Lawrence, plans by Mann & Co., engrs.-archts., 201 E. 1st St., Hutchinson, students union bldg. $750,000. Bids in Fall. CD 11/7.



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▲ Ky., **Lexington**—MEN'S DORMITORY—Commonwealth of Ky., Div. Purchases, Frankfort, plans by John F. Wilson & Assoc., 508 E. Main St., 3 story, brick, stone, 514-bed men's dormitory for University of Kentucky. **$1,750,000.** Proctor-Ingles, 914 S. Limestone St., consult. engrs. CD 9/13.

▲ **Mass., Ipswich**—SCHOOL—Town, c/o Robert M. O'Kane, supt. Schools, 23 Green St., plans by Perley F. Gilbert Assoc., Inc., Sun Bldg., Lowell, high school, Rte. 1A. **$1,200,000.** CD 2/2/56.

▲ **Mass., Scituate**—SCHOOLS—Town, School & P. Bldg. Comn., c/o Supt. Schools, Cudworth Rd., Scituate Center, plans by Korslund, LeNormand & Quann, Inc., 506 Washington St., Norwood, Senior High School, Rte. 3, Cushing Way and First Parish Rd., **$800,000;** plans by Hoover & Hill Assoc., 102 Mt. Auburn St., Cambridge, Mass., Junior-Senior High School (10 room addn.), First Parish Rd. **$350,000.** CD 4/17.

Mass., **Worcester**—CLASSROOM, etc.—Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr. 38 Chauncy St., Boston, plans by John M. Gray Co., 153 Milk St., Boston, E-59-4R, classroom and laboratory bldg. for State Teachers College. **$850,000. CD 2/13.**

▲ **Mich., Madison Heights**—SCHOOL—City, F. Foster Williams, Supt. Schools, voted bonds May 19, high school. **$1,000,000.** George D. Mason & Co., 409 Groswold, Detroit, archts. CD 4/24.

▲ **Minn., Bloomington (P. O. Minneapolis)**—SCHOOL—Bd. Educ., C. Miller, clk., voted **$2,600,000** bonds May 20, Junior High School at Ninetieth St. and Portland Ave. CD 5/5.

▲ **Minn., Owatonna**—SCHOOL—Bd. Educ., c/o clk., defeated **$1,600,000** bonds May 20, high school addn., elementary school. CD 5/12.

▲ **Mo., Clayton (St. Louis 5 P. O.)**—CIRCUIT COURTS, etc.—St. Louis County, c/o Luman F. Matthews, co. superv., Court House, Zone 5, **$6,500,000** bond election Aug. 5, 7 story bldg. to house circuit courts, magistrates courts and offices of circuit clerk and sheriff, etc. in area bounded by Central, Meramec, Bonhomme and Carondelet Aves. Leo A. Daly Co., 3207 Olive St., St. Louis, Zone 3, archt. CD 5/12.

▲ **Mich., Ferndale**—SCHOOLS—City, Bd. Educ., 130 East 9-Mile Rd., defeated bonds May 20 schools. **$1,500,000.** CD 4/20.

▲ **Neb., Omaha**—LIBRARY—City, City Hall, plans by Leo A. Daly, 633 Ins. Bldg., Zone 2, main library. **$3,456,000.**

▲ **N. J., Caldwell**—SCHOOL—Caldwell-West Caldwell School Dist., voted **$2,900,000** bonds, Senior High School. CD 8/24/56.

▲ **N. J., Eatontown**—SCHOOL—Bd. Educ. plans by Frederic P. Wiedersum Assocs., 65 Roosevelt Ave., Valley Stream, N. Y., 800-pupil Monmouth Regional High School, on site to be selected, Eatontown-Shrewsbury, **$1,500,000.**

N. J., **Hackensack**—HOUSING—City of Hackensack Housing Auth., 170 Sussex Ave., plans by Charles Cleveland, 214 Main St., 50 unit old-age housing development, Beech St. and Railroad Ave., **$831,000.**

N. J., **Long Branch**—HOUSING—Housing Auth. of City of Long Branch, Garfield Court, plans by James Mancuso, 9 Memorial Parkway, ten 1 story, 57 units old age housing, downtown business dist. **$850,000.**

▲ **N. J., Somers Point**—SCHOOL—Bd. Educ., Henry Zimmerman, pres., Somers Point, plans by Frederic P. Wiedersum Assocs., 65 Roosevelt Ave., Valley Stream, N. Y., 1000-pupil Mainland Regional High School to serve Northfield, Linwood and Somers Point. **$2,000,000.**

▲ **N. Y., Lockport**—COUNTY JAIL—Bd. Supervs., Niagara Co., Court House, plans by Albert D. Elia, 2118 Main St., Niagara Falls, county jail. **$1,500,000.** Chas. H. Obenhack, 40 Falls St., Niagara Falls, engr. CD 4/4.

▲ **O., Columbus**—POLICE STATION—City, City Hall, plans by Ralph W. Kempton, 50 N. Broad St., 6 story, addn. to central police station. **$1,750,000.**

▲ **O., Youngstown**—SCHOOL—Bd. Educ., Austintown School Dist., 5800 Mahoning Ave., Junior High School, **$1,200,000.** CD 11/16/56.

▲ **Okla., Tulsa**—SCHOOL EXPANSION—Bd. Educ., 410 S. Cincinnati St. voted bonds, May 20, schools. **$4,000,000.** CD 4/22.

Pa., **Evans City**—SCHOOL—Evans City Area Jt. School Dist., R.D. 2, grade school addn. **$725,000.**

▲ **Pa., Kutztown**—SCHOOL—Kutztown Area Jt. School Dist., Kutztown, high school addns., alterations. **$1,125,000.**

▲ **Pa., Lebanon**—CITY-COUNTY—Lebanon Co., Lebanon, voted **$1,000,000** bonds May 20, city-county bldg. to serve as combination city hall and courthouse.

▲ **Pa., Lock Haven**—HOSPITAL—Lock Haven Hospital, hospital. **$2,500,000.**

S. **C., Columbia**—SCHOOL—Columbia City Schools, Guy R. Varn, supt., 1311 Marion, plans by Lafaye, Fair, Lafaye, Assocs., archts.-consult. engrs., 1226 Sumter St., A. C. Flora High School. **$750,000.**

▲ **Tenn., Chattanooga**—SCHOOL—Chattanooga City School Bd., 413 E. 8th St., plans by Selmon T. Franklin, 421 Poplar St., school bldg. in Brainerd section to accommodate 1,000 students. **$1,750,000.**

▲ **Tenn., Knoxville**—CITY HALL—City, constr. city hall. **$2,000,000.**

▲ **Tex., Houston**—SCHOOL—Houston Ind. School Dist., 1300 Capitol St., plans by **Nunn, Nunn & Ulbricht,** 3772 Westheimer St., Little York Rd. Junior High

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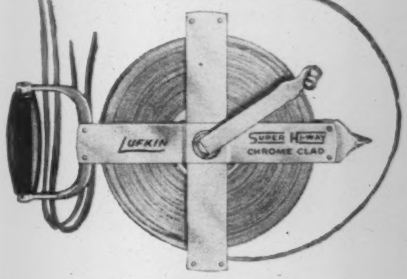

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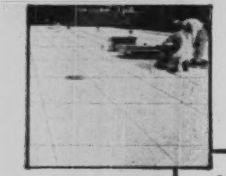

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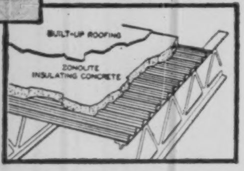

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School in Durkee School area. **$1,500,000.** CD 6/8/56.

▲ **Wis., River Falls**—TRAINING SCHOOL—Bd. of Regents of State Colleges, Madison, plans by Schubert, Sorensen & Assocs., 308 Hoenkler Bldg., La Crosse. Training School. **$1,000,000.** CD 9/21/54.

▲ **Wyo., Powell**—SCHOOL—School Dist. No. 1, voted **$1,750,000** bonds, 3 story high school bldg. Cushing & Terrell & Assocs., 1333 Air Port Rd., Billings, Mont., consult. engrs.-archts. Bids about **July 1.**

COMMERCIAL BUILDINGS

▲ **Calif., Fresno**—COMMERCIAL—Pacific Mutual Life Insurance Co., Pacific Mutual Bldg., Los Angeles, 9 unit commercial bldg. in Manchester Shopping Center adjacent to Dpt. Store on Shields Ave. **$800,000;** plans by Walter Wagner & Partners, 1830 Van Ness, 15 unit commercial bldg. in Manchester Shopping Center, on N. Blackstone St. **$1,000,000.**

▲ **Calif., Galt**—CATHOLIC SEMINARY—Roman Catholic Church, c/o Bishop of Sacramento, 1115 K St., Sacramento, Catholic Seminary on 100 acre site at Jct. of Twin Cities and Midway Rds., near here. **$2,500,000.**

▲ **Calif., Los Angeles**—HOSPITAL—California Hospital, 1414 S. Hope St., plans by Walker, Kalionzes, & Klingerman, 488 S. San Vicente Blvd., 9 story California Hospital addn. **$3,000,000.**

▲ **Calif., Los Angeles**—SHOPPING CENTER—Lampa Park, 3450 Wilshire Blvd., plans by Albert C. Martin & Assoc., 333 S. Beaudry Ave., shopping center, Victory Blvd. in Reseda Dist. **$1,000,000.**

▲ **Calif., Oakland**—APARTMENT—Gerson Bakar, 143 E. 14th St., glass, steel, concrete apartment **$2,000,000** Constr. Fall 1958.

▲ **Conn., Wethersfield** — SHOPPING CENTER — M. J. Neiditz & Co., 37 Lewis St., Hartford, shopping center, incl. supermarket, department stores, Chain 5 & 10 Cent Store, bank, other shops, Silas Deane Hy. **$2,000,000.**

▲ **Fla., Miami** — HOSPITAL — South Florida Hospital Corp., c/o Smith & Korach, archts., 1630 Lenox Ave., Miami Beach, 5 story, 135 x 270 ft. RIC and CBS approx. 166 bed provisions for 228, Cedars of Lebanon Hospital, NW 12th Ave. and NW 14th St. **$2,000,000.** N. J. Gignum & Assocs., 260 Palmero Ave., Coral Gables, struct. and mech. engrs.

▲ **Ga., Lawrence**—MERCHANDISE MART—Southeastern Mart, Inc., c/o Heery & Heery, archts., 1722 Peachtree St. N. W., Atlanta, Ga., 11 story, Merchandise Mart, 350,000 sq. ft. coliseum, 2 story, raised concrete, connecting bldgs., theatre, heliport. **$15,000,000.** Constr. in October.

Kan., Overland Park—BOWLING ALLEY—Western Development Co., c/o Wilmer Holsinger, 3308 W. 64th St., Kansas City, Mo., plans by Manuel Morris, Railway Exchange Bldg., Kansas City, Mo. 32-lane 150x180 ft., stone exterior. King Louie West Bowling Alley, meeting rooms, pro-shop, snack bar, air-conditioned, etc. **$900,000.** King Louie Bowl, lessee.

Ky., Fort Thomas—HOSPITAL—St. Luke Hospital, 85 Grand Ave., Ft. Thomas, hospital expansion, imprvs. **$700,000.**

Ky., Louisville—OFFICE, etc.—Cooperative Seed & Farm Supply Co., 7th and Main, Richmond, Va., 1 story, 150,000 sq. ft., steel, brick on concrete block, office and warehouse near Strawberry R. R. yards. **$750,000.** Torrence & Dreclin & Assoc., 304 W. Cary St., Richmond, Va., consult. engrs.

▲ **N. Y., Hamburg**—HOMES—Ingalls Bldg. Corp., 220 Springville, Eggretsville, N. Y., 750 home sub-division known as "Forest-Glen." **$15,000,000.**

▲ **N. Y., Hamburg**—STORE—Gateway Plaza, Inc., 47 W. Huron St., Buffalo, plans by Herb G. Smith, 391 Delaware Ave., Buffalo, 300,000 sq. ft., 40 store shopping plaza, incl. parking area for 3,500 cars. **$3,250,000.**

▲ **N. Y., New York**—METROPOLITAN OPERA HOUSE, etc.—Lincoln Center for Performing Arts, c/o Harrison & Abramovitz, ch. archts., 630 Fifth Ave., New York, N. Y., Metropolitan Opera House, concert hall, Theatre of the Dance and Juilliard School, 63rd and 65th Sts., Columbus and Amsterdam Aves. **$75,000,000.** Philip Johnson Assocs., 375 Park Ave., New York, N. Y. are architects for School of Dance. Pietro Belluschi, School of Architecture & Planning Massachusetts Institute of Technology, 77 Mass Ave., Boston, Mass., archt. for Juilliard School.

▲ **O., Cincinnati** — HOUSING — Edgar Mathias, 3518 Epworth Ave., plans by Edward Niemeirer, 4484 Harrison Ave., 80 one-floor, 1½ story, bsmnt., brick, houses, Rybolt and Wesseling Rds. **$1,750,000.** Constr. this summer.

▲ **O., Cincinnati**—HOUSING—Murphy Bldrs., Inc., 7945 Hamilton Ave., plans by Edward Niemeier, 4484 Harrison Ave., 70 one-story, bsmnt., tri-level brick, homes on new street off Paddison Rd. **$1,500,000.** Constr. June-July.

▲ **O., Dayton**—HOMES—American Constr. Co., 1400 E. Dorothy Lane, 90 brick homes on 25 acre site on west side of Gettysburg Ave. north of Cornell Dr. facing on Blueberry Ave. **$1,000,000.**

▲ **O., Willowick**—SHOPPING CENTER—Shoregate Stores, 17903 St. Clair Ave., Cleveland, Zone 10, plans by Weinberg & Teare, Citizens Bldg., Cleveland Zone 14, 150,000 sq. ft. wing to Shoregate Shopping Center, **$1,500,000.**

▲ **Pa., Carlisle** — HOSPITAL — Carlisle Hospital, 224 Parker, hospital addn. **$4,000,000.**

▲ **Pa., Danville**—HOSPITAL—Geisinger Memorial Hospital, constr. hospital addn. **$1,757,000.**

▲ **Pa., Johnstown**—HOSPITAL—Lee Hospital, 320 Main St., hospital addn. **$1,630,000.**

▲ **Pa., Wilkes-Barre**—HOSPITAL—Mercy Hospital, 196 Hanover, hospital addn. **$2,500,000.**

▲ **Pa., Wilkes-Barre**—HOSPITAL—Wilkes-Barre General Hospital, N. River, hospital addns. **$3,000,000.**

▲ **S. C., Columbia** — HOSPITAL — Providence Hospital 2435 Forest Dr., plans by Lafaye, Fair, Lafaye Assocs., archts.-consult. engrs. 1226 Sumter St., hospital bldg., expan. of facilities. **$1,000,000.**

▲ **Tex., Fort Worth**—SHOPPING CENTER—Frank C. Bliss, 417 W. 7th St., shopping center, Tarrant Rd. and Edgewood Terrace. **$1,750,000.**

▲ **Tex., Houston**—APARTMENT UNITS, SHOPPING CENTER, etc.—Farb Interests, c/o Harold and Albert Farb, 2015 S .Shepherd,
428-apartment units in Woodside Plaza **$3,500,000.**
shopping center bldg., Steela Link Rd. **$2,225,000.**
auto parking center in Woodside Plaza, **$200,000.**
hard paved area and auto parking center on Steela Link Rd. **$100,000.**
sanitary sewerage sys. Stella Link Rd. **$75,000.**
drainage sys. Stella Link Rd. **$75,000.**
sanitary storm sewer lines Wood Plaza **$80,000.**
site development Woodside Plaza **$45,000.**
site development (grading, leveling, filling) Stella Link Rd. **$50,000.**
area lighting sys. Woodside Plaza **$75,000.** Edminster Eng. Co., 2610 Sunset Blvd., Houston, Tex. consult. engrs.

Tex., Houston — COUNTRY CLUB — Glenhaven Country Club, 9604 Main St., country club bldg. and allied facilities. **$750,000.**

▲ **Tex., San Antonio**—BOWLING CENTER—Col. Jos. Carmack & Assocs., 434 E. Hathaway, plans by Jno. Chenault, San Pedro Ave., bowling center. **$1,000,000.** Beretta, Greenslade, & Assocs., 2101 N. St. Marys, consult. engrs. CD 5/23.

▲ **Wash., Lynnwood**—HOUSES—Stewart & Potter Homes, Inc., 80 houses, west of Hy. 99 in Sierra Village. **$1,200,000.**

Wis., Fond du Lac—Y.M.C.A. BLDG—Young Men's Christian Assn., Fond du Lac, Y.M.C.A. Bldg. **$850,000.**

▲ **Wis., Milwaukee**—SHOPPING CENTER—Onnie Corp., c/o Bock & Lee, Inc., 2040 W. Wisconsin Ave., plans by R. E. Rasche, 601 W. Capitol Dr., shopping center, Colonial Village. **$1,500,000.**

▲ **Ont., London**—SHOPPING CENTER—Hyde Park Shopping Center, M. M. Burch, 1117 Sunset Ave., plans by F. White, 149 King St., shopping center with supermarket, service station and 16 stores and 1,000 car parking lot. **$2,250,000.**

INDUSTRIAL BUILDINGS

Conn., Bridgeport—PLANT—Powr-Pak-Conn. Chem. Inc., 643 North Ave., 1 story, 90,000 sq. ft. mfg. plant, for mfr. of Aerosol products, 145 Howard Ave., **$900,000.**

▲ **Ga., Brunswick**—PLANT—Bestwall-Gypsum Co., 120 E. Lancaster Ave., Ardmore, Pa., gypsum board, lath and plaster plant. **$2,000,000.**

▲ **Louisiana**—GAS PROCESSING PLANT—Magnolia Petroleum Co., 1009 Fannin, Houston, Tex., 150,000 sq. ft. gas processing plant at Cameron Meadows near Gulf of Mexico. **$3,500,000.**

▲ **Mich., Coldwater**—FACTORY—American Metal Climax, Inc., Coldwater, factory. **$1,000,000.**

Mich., Lansing—PARTS, etc.—John Deere Plow Co., 735 E. Michigan, Lansing, parts bldg. and office, US-16. **$700,000.**

Tex., Garland—PLANT—Temco Aircraft Corp., plant addn. **$750,000.** Harrell & Hamilton, 819 Republic Bank Bldg., Dallas, plant addn. **$750,000.**

▲ **Tex., Houston**—PLANT—Bjorkesten Research Laboratories, Fish Hatchery Rd., Madison, Wis. plant. **$1,500,000.**

Tex., Houston—LABORATORY—The Texas Co., Research Div., 1002 N. Rich Ave., plans by Chas. S. Chase, 2317 Bissonnet, 1st phase laboratory constr. **$750,000.** CD 10/25.

▲ **Tex., Palestine**—PLANT—Texize Chemical Co., Laurens Rd., Greenville, S. C., liquid detergent soap mfg. plant. **$1,000,000.** CD 3/23/56; site work **$60,000.**

UNCLASSIFIED

▲ **Ala., Mobile**—DOCK FACILITIES—Reichhold Chemical Inc., Southern Div., Tuscaloosa, deep water terminal on Blakely Island, Mobile, dredging, dock facilities, several million gal. tank storage **$1,000,000,** B. F. Galloway, Jr., Tuscaloosa, chf. engr.

▲ **Ill., Carpentersville**—RACE TRACK—Meadowdale Raceway, c/o Leonard W. Besinger, Carpentersville, 4.2 mi. race track, Hy. 31 and Huntley Rd., **$2,000,000.**

▲ **Texas**—TELEPHONE CABLE—Southwestern Bell Telephone Co., Auditorium Circle, San Antonio, laying 158 mi. underground telephone cable between San Antonio and Laredo. **$2,200,000.**

▲ **Tex., Dallas**—LIVESTOCK COLISEUM—State Fair of Dallas, c/o Fair Park Fairgrounds, Dallas, plans by Harper & Kemp, c/o Thomas Bldg., and Donald S. Nelson, 505 N. Ervay, 7000 seating capacity, livestock coliseum, stock barn **$1,750,000.**

▲† **Alaska**—TRANSMISSION LINES—Chugach Electric Assn., Anchorage, Cooper Lake Hydro-Electric Project on Kenai Peninsula, with high voltage transmission line. **$12,500,000.** North Pacific Consultants, 611 Park Ave. Bldg., Portland 5, Ore., consult. engrs. CD 7/21/55, under Earthwork, etc.

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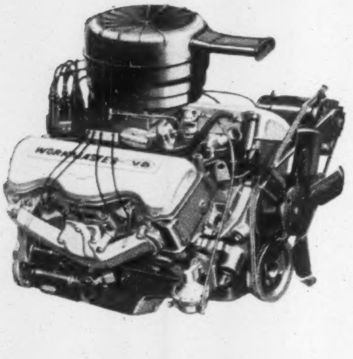
*Unique design advantages . . .
special work-whipping features
. . . these are the things that
make Chevrolet tandem models
the trucks best able to do big
jobs the way you want them done!*



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POWER**

Chevrolet's broad-shouldered six-wheelers are tops for high-profit hauling on the big, tough jobs! Triple-Torque tandem models in Series 80 and 100 are specially engineered to haul king-sized payloads—and keep costs down while doing it! G.V.W.'s go all the way up to 36,000 lbs. And there's plenty of power, too. Standard in 80 Series is the new 175-h.p. Heavy-Duty Super Taskmaster V8. Its short-stroke design means more pulling power per pound. Chevy's revolutionary new Workmaster V8 is standard in Series 100 tandems. With 230 h.p., 348 cubic inches of displacement and new Wedge-Head design, the Workmaster stays and saves on heavyweight hauling jobs with a new kind of hustle!

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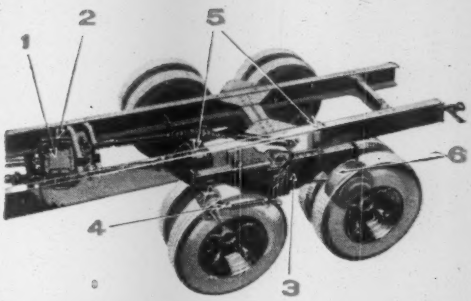

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1. Chevrolet's exclusive TRIPLE-TORQUE DRIVE is provided by individual propeller shafts driven by the power divider with integral 3-speed auxiliary transmission.

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Let your Chevrolet dealer show you these, and the many more exclusive tandem features designed to get your big jobs done quickly, dependably and economically! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

TASK·FORCE TRUCKS

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

June 18 Vermont

STREETS AND ROADS

June 16 Connecticut
June 18 Massachusetts

BUILDINGS—LB & CA

▲ **Vara Constr. Inc.**, 718 Huntington Ave., Boston, Mass., LB **$1,577,000** est. $1,500,000, Forest Grove JUNIOR HIGH SCHOOL, Grove and Forest Sts., WORCESTER, MASS. City, School Dpt., Leo Doherty, supt., Chamber Commerce Bldg., Worcester, Mass. Bids May 28. CD 5/6.

▲ **Park Builders, Inc.**, Park St., Manchester, Conn. CA **$2,362,500**, 175 HOUSES "Knollwood", Filter Bed Road, ELLINGTON, CONN. Philip A. Winston, Filter Bed Rd., Ellington, Conn. Awarded May 29. CD 2/13.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

June 17, 24 New Jersey
June 27 Pennsylvania

BUILDINGS—BA

▲ **N. Y., Brooklyn**—SCHOOL—BA 6/24—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures for new Public School 299, Evergreen Ave., between Woodbine and Madison Sts., Brooklyn Boro. Plans deposit $25 general, $8 trades. CD 5/20.

HEAVY CONSTRUCTION—LB & CA

▲ **New York**—Dpt. P. Wks., Gov. Alfred E. Smith State Office Bldg., Albany. Bids opened 6/5.

N. Y.—**Daniel F. MacNamee & Co., Inc., 271 North Ave., New Rochelle N. Y., LB $1,015,261.80.** Est. $1,613,000.00 (6 bidders) 11.31 mi. New York State Thruway—New England Sect., Subdivisions 1, 2, 2A, 3, 4, 5.

N. Y.—**Hendrickson Bros., Inc., Valley Stream, N. Y., LB $3,627,022.50.** Est. $4,724,000.00 (4 bidders) 7.00 acc. mi. Sunrise Highway Extension Cont. 1 (Phyllis Drive to Yaphank Ave.) 6.82 mi.

N. Y.—**S. J. Groves & Sons Co., P.O. Box 145, Eastwood Sta., Syracuse 6, N. Y., LB $5,294,309.55.** Est. $6,864,000.00 (8 bidders) 3.98 mi., 5.55 acc. mi., City of Rome: East Whitesboro St. Arterial; City of Rome: Southerly Hwy. Connections.

N. Y.—**George M. Brewster & Son, Inc., 275 Ft. Lee Rd., Bogota, N. J., LB $1,049,087.60.** Est. $1,170,000.00 (5 bidders) 0.91 mi. Rte. 59, Knapps Corners-Nyack, S.H. 5178.

N. Y.—**Serafini Const. Co. Inc., P.O. Box 265, Binghamton, N. Y., LB $1,884,676.60.** Est. $2,280,000.00 (8 bidders) 10.52 mi. Rte. 14, Gabriels Corners-Starkey, Pt. 2, S.H. 8399; Starkey-Dresden, Pt. 1, S.H. 8399; Starkey-Dresden, Pt. 2, S.H. 8353.

N. Y.—**Frank Mascali & Sons, Inc., Flushing, N. Y., LB $3,883,733.00.** Est. $5,123,000.00 (11 bidders) 0.50 mi. Harlem River Drive, Cont. 145 A (West 145th St. to Seventh Ave.).

N. Y.—**R. J. Marshall, Inc., 6 Church St., Wappinger Falls, N. Y., LB $1,286,779.50.** Est. $1,441,000.00 (5 bidders) 0.67 mi., 1.17 acc. mi., Palisades Interstate Parkway, Sect. 1 (Queensboro Interchange).

▲ **Edward Balf Co.**, 190 Huyshope Ave., Hartford, Conn., **Savin Constr. Co.**, 10 Village St., East Hartford, Conn. and **D. W. Winkelman Co., Inc.**, 205 Harrison, Syracuse, N. Y., (joint venture), CA **$37,366,805**, Section 2, twin conduits, structures to carry water for Niagara Power Project, Niagara Co. Niagara Contr. N6, Spec. No. PA-N-23005, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids May 13. CD 5/15, under LB.

▲ **Gull Contg. Co., Inc., and L. G. DeFelice & Son, Inc.**, 33-15 Lawrence, Flushing, L. I., New York (jointly) CA **$29,861,840**, Section No. 3, waterways and appurtenant work for Niagara Power Proj. in Lewiston and Niagara, Niagara Co., Contr. N-7, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids May 20. CD 5/22, under LB.

▲† **Baltimore Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md. and **Construcoes Gauveia Entrecànales Y Tavora S.A.R.L.** of Lisbon, Portugal CA **$2,428,346** (joint venture) constr. buildings and P.O.L. facilities, Lajes Field, ENG-30-347-58-9, TERCEIRA, AZORES. U. S. Eng., 346 Broadway, New York 13, N. Y. Bids May 22. CD 6/2, under LB.

BUILDINGS—LB & CA

▲ **John W. Cooper Co., Inc.**, Sheridan Rd., Buffalo, N. Y., CA Est. **$3,500,000**, 440,000 ft. PLANT and OFFICE for manufacturing boxes and cartons, CHEEKTOWAGA, N. Y. F. N. Burt Co., Inc., 514 Seneca St., Buffalo, N. Y. H. E. Plummer & Assocs., c/o owner, engrs.

▲ **Ingalls Bldg. Corp.**, Fred Ingalls, pres., 220 Springvale Ave., Eggertsville, N. Y., Owner Bulids, **$15,000,000**, 750 HOMES, Forest Glen Development, (4 year program), HAMBURG, N. Y.

▲† **F. D. Rich Co., Inc.**, 550 Summer, Stamford, Conn., LB **$3,384,000** (2 bidders), 216 family units Capehart HOUSING at Hancock Air Force Base, SYRACUSE, N. Y. Procurement Office, 15th Fighter W.G. Headquarters, Municipal Airport, Niagara Falls, N. Y. Bids May 27. CD 5/20.

▲ **Wellmore Buliders**, Valley View Rd., Millington, N. J., Own Forces, **$1,500,000**, 33 HOUSES, Martinsville Rd., Warren Twp., PLAINFIELD, N. J., Ellsworth Giles, 35 Olcott Square, Bernardsville, N. J., archt.

▲ **Sordoni Constr. Co.**, 45 Owen St., Forty Fort, Wilkes-Barre, Pa. CA **$2,922,000** general constr. 2 patient WARD BLDGS. for Wernersville State Hospital, WERNERSVILLE, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids May 14. CD 5/20, under LB.

▲ **Baton Constr. Co.**, 1717 Sansom St., Phila., Pa., LB **$3,198,000**, est. $3,500,000 (7 bidders) SENIOR HIGH SCHOOL, and also sewer line, WILMINGTON, DEL. City, Wilmington Bd. P. Educ., 511 W. 8th St., Wilmington, Del. Bids June 3. CD 5/29.

▲ **Standard Constr. Co.**, 1010 Vermont Ave., N.W., Wash., D. C., LB **$2,030,470** (3 bidders) constr. 174 dwellings HOUSING PROJECT No. DC-124, Syphax Gardens, between O and P Sts. and between Hall and 2nd St., S.W., WASH., D. C. National Capitol Housing Auth., 1729 New York Ave. N.W., Wash., D. C. Bids May 29. CD 5/2.

SOUTH

HEAVY CONSTRUCTION—BA

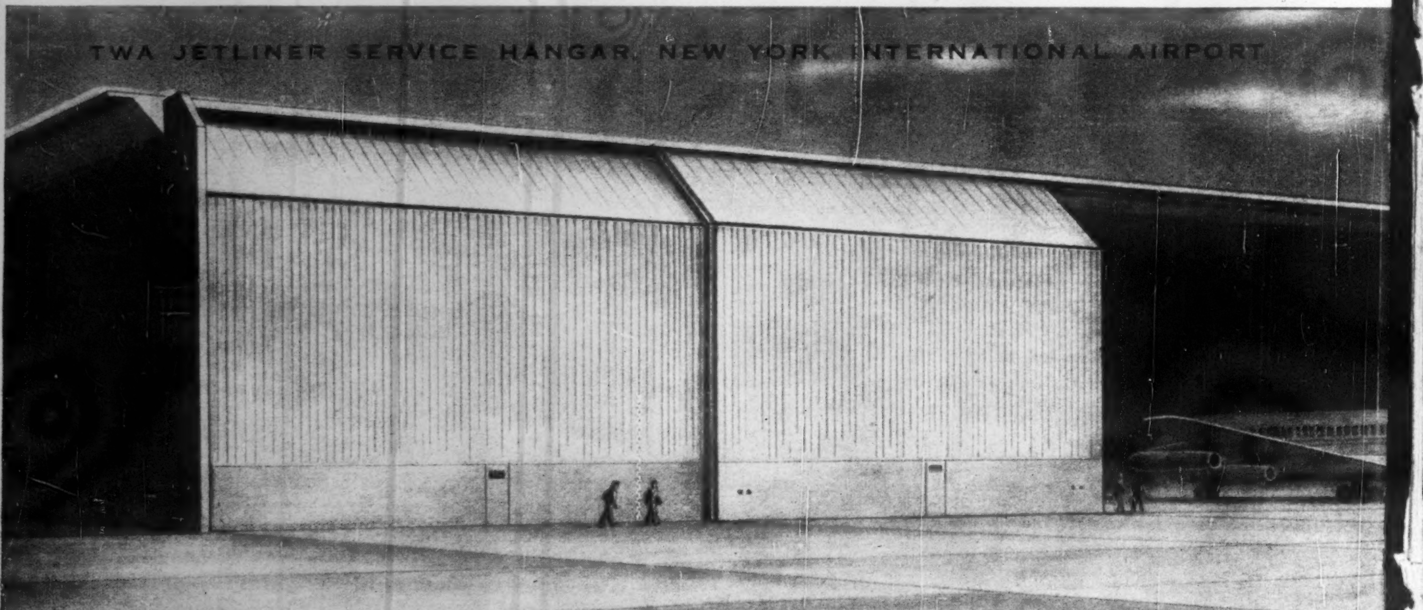
STATE HIGHWAY LETTINGS

BRIDGES

June 17 South Carolina
June 20 Kentucky
June 25 Virginia
June 26 Florida

STREETS AND ROADS

June 17 South Carolina
June 20 Kentucky
June 25 Virginia
June 26 Florida


TWA JETLINER SERVICE HANGAR, NEW YORK INTERNATIONAL AIRPORT

ENGINEERS: AMMANN & WHITNEY • GENERAL CONTRACTORS: GROVE, SHEPHERD, WILSON & KRUGE, INC.

PEELLE HANGAR DOORS

The TWA service hangar access door illustrated is 820 feet long and 50 feet high at the front. The Peelle horizontal sliding doors in this hangar are arranged in four banks of three door panels. These panels move in groups of three; with individual operators in each panel. Doors and canopies have corrugated aluminum skins. The canopies are part of the door structures. Doors for two identical hangar openings were supplied for the TWA hangar. Peelle also manufactured and installed the doors for the Pan American Jetliner hangar and the Lockheed hangar, both at the New York International Airport, as well as the Motorstair in the terminal building.

PEELLE FOR DOORS • Freight Elevator Doors • Dumbwaiter Doors • Industrial Doors

▲ **Ala., Birmingham**—BA 7/1—Jefferson County Comn., Courthouse, Shades Valley Sewage Treatment Plant $1,750,000. Plans deposit $50. J. W. Goodwin Engineers., 2111-7th Ave. S., engrs. CD 10/11.

BUILDINGS—BA

▲ **Ala., Auburn**—STUDENT HOUSING—BA 7/1—Alabama Polytechnic Institute, nineteen 2 story, totaling 240 dwelling units, married student housing, office and laundry bldg. $1,500,000. Plans deposit $50. T. B. Kirkland, 28 S. Hull St., and Streeter Wyatt, 746 Adams Ave., Montgomery, archts. CD 1/23.

HEAVY CONSTRUCTION—LB & CA

▲† **E. C. Ernst, Inc.**, 1622 14th N. W., Wash. D. C. LB **$1,789,998** (7 bidders) 2nd increment, imprvs. to electric power sys., Naval Base (Sewells Point area), NBy 15155, Spec. 15155/57 NORFOLK, VA. Dist. P. Wks. Office, 5th Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids June 3. CD 5/1.

▲ **SOUTH CAROLINA** State Hy. Dpt., Hotel Jefferson, Columbia.

S. C.—**J. F. Cleckley & Co.**, P. O. Box 656, Orangeburg, S. C. CA **$2,189,364** grading, 9.069 mi. 4 lane divided hy. Int., Rte. 26 from Rte. 66 to US Rte. 276 S. C. Docket No. 30.370 F. A. Proj. No. I-304-2 (8) Laurens Co.;

S. C.—**Clement Bros. Co.**, Lenoir, N. C. CA **$2,310,323** grading, etc. 11.027 mi. 4 laned divided hy. Int. Rte. 26 from Rte. 19 to Rte. 66 S. C. Dockets Nos. 30.369 and 36.325 F. A. Proj. I-304-2 (12) Laurens and Newberry Counties. Bids Apr. 15. CD 4/23, under LB.

▲† **Robert E. Lee Co., Inc., & Cherokee, Inc.**, P. O. Box 1296, Columbia, S. C., CA **$9,166,971** constr. SAC-Airfield paving FY 58, Robbins Air Force Base, ENG-09-133-58-51, MACON, GA. U. S. Eng. 200 E. St. Julian St., Savannah, Ga. bids May 23, CD 4/14.

Empire Gas Eng. Co., 7 Baltimore Place, Atlanta 8 Ga., CA **$565,636**, constr. SAC-POL facilities FY 58, (Macon, Ga.)

▲† **Jahncke Service, Inc.**, 814 Howard Ave., New Orleans, La., LB **$1,635,315**, dredging 10,285,000 cu. yd. Mississippi River-Gulf outlet for 36x500 ft. channel. Inv. No. 58-263, New Orleans, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids June 3. CD 5/14.

▲† **Hardaway Constr. Co.**, Box 1360, Columbus, Ga., CA **$19,058,691**, Navigation Lock (left bank Ohio River near existing Lock No. 41), CIVENG-15-029-58-50, KENTUCKY and INDIANA. U. S. Eng., P. O. Box 59, Louisville, Ky. Bids May 8. CD 5/12, under LB.

BUILDINGS—LB & CA

▲† **A. C. Samford, Inc.**, P.O. Box 1229, Albany, Ga., CA **$3,236,262**, 200-units Capehart HOUSING, Turner Air Force Base, ALBANY, GA. Procurement Officer, Turner Air Force Base, Albany, Ga. Bids May 14. CD 5/8.

▲ **Gulf Stream Estates Co.**, 1000 NE 5th St., Hallandale, Fla., Owner Builds. Approx. **$1,500,000.** 98 RESIDENCES, 1019 NE 7th St. section, HALLANDALE, FLA.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

June 18 Michigan

STREETS AND ROADS

June 2 Ohio June 18 Michigan

▲ † **Wisconsin—Minnesota**—NIKE INSTALLATIONS—BA 6/24—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul 1, Minn., constr. NIKE installations in Minneapolis-St. Paul Defense Area, near Roberts, Wis. and near Farmington, St. Bonifacius and Bethel, Minn., Inv. ENG-21-018-58-19, $1,500,000 each, CD 5/28.

BUILDINGS—BA

▲ **Mich., Detroit**—LIBRARY—BA 7/8—City P. Library Comn., 5201 Woodward St., bsmnt. constr. for two wings to Main Library $1,500,000. CD 3/3/54.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., 165 Capitol Ave., Columbus, Bids opened 5/27,

O.—**C. F. Replogle**, Circleville, O., LB **$3,861,860**, est. $4,308,400, constr. 3.6 mi. portion Columbus-Medina section of Cincinnati-Conneaut Freeway, 7 bridges will be constructed; 2 relocated portion of Ritter Rd.; 5 will be at Mock Rd., Clear Fork Stream, Alexander Rd., B. & O. R.R. and as part of a diamond type interchange at State Route 97, Proj. SR 1-4.96, Richland Co.;

O.—**Edgar Spring, Inc.**, New Philadelphia, O., LB **$434,908**, est. $506,500, grading, 12.2 mi., state Route 39, pavement from Carrollton to Mechanicstown, Carroll Co.;

O.—**Great Lakes Constr. Co.**, 6600 Schaaf, Cleveland, O., LB **$240,902**, est. $248,200, widen and resurfacing 2.9 mi. State Route 291 extending southward from Five Points Rd. in Brookpart Village to Fowles Rd. in Middleburgh Heights Village, Cuyahoga Co.;

O.—**Elmer Vogt, Inc.**, 859 Welman, S.E., Massilon, O., LB **$187,923**, est. $234,000, widen and resurfacing 1.4 mi. State Route 628 from Woodside St. in North Canton eastward, a 44 ft. wide bridge will be constructed to replace the narrow structure over Numishillen Creek, Stark Co. CD 5/2.

▲ **INDIANA**—State Hy. Dpt., John Peters, chn., State House Annex, Indianapolis, Bids opened 5/27,

Ind.—**Muncie Paving, Inc.**, Muncie, Ind., LB **$232,732**, est. $234,348, (1 bidder) bit. pavement with macadam base Contr. R-4402, S-119(4), Henry Co.; LB **$1,448,505**, est. $1,710,599, (6 bidders), c. conc. pavement, Contr. R-4427, F-391(4), Delaware Co.;

Ind.—**Vogel Constr. Co.** 3760 E. St. Clair St., Indianapolis, Ind., LB **$715,956**, est. $720,760, (2 bidders), c. conc. pavement base and wid'n., Contr. R-4403, F-187(13), Morgan and Hendricks Counties; LB **$97,432**, est. $101,171, (4 bidders), conc. base, wid'n. bit. resurf. Contr. RS-4433, F-86(6), Marion Co.;

Ind.—**McMahan Ill. Corp.**, Rochester, Ind., LB **$582,240**, est. $655,069, (2 bidders), bit. pavement with concrete base, Contr. R-4407, U-829(3), Tippecanoe Co.;

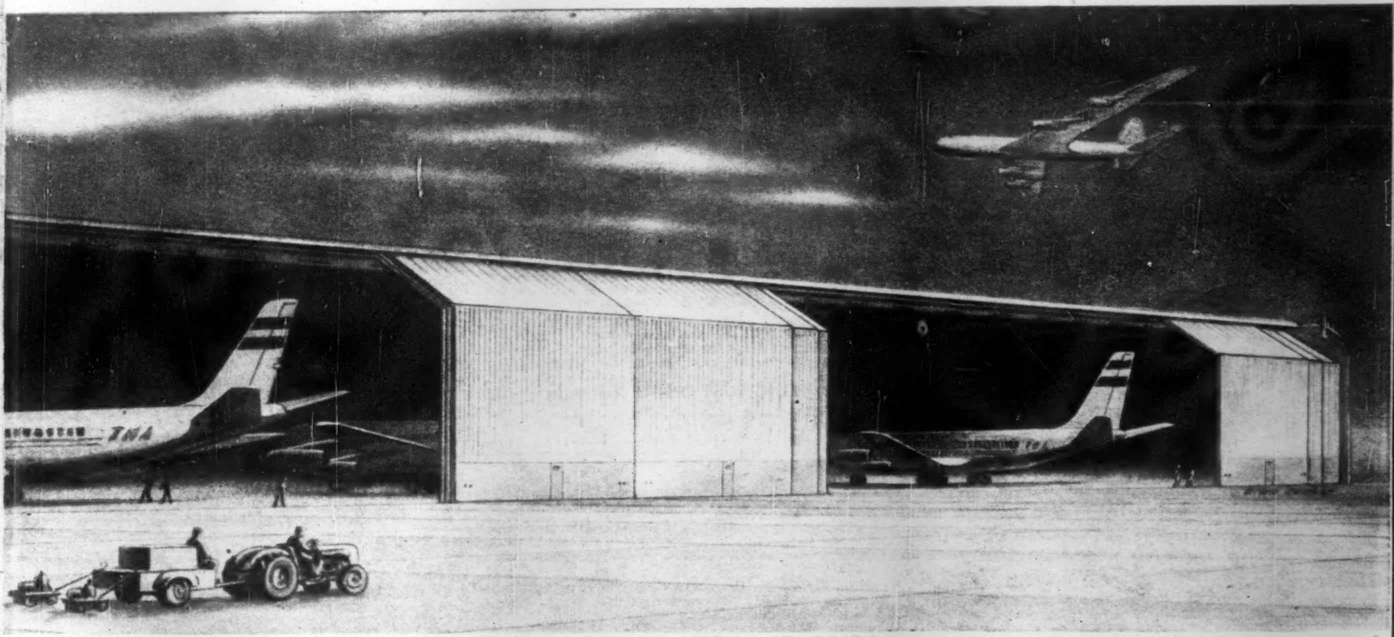
Ind.—**Berns Constr. Co.**, 312 E. Washington St., Indianapolis, Ind., LB **$1,859,611**, est. $2,051,262, (6 bidders), c. conc. pavement Contr. R-4422, I-03-4(8), Boone Co.;

Ind.—**L. P. Cavett Co.**, Lockland, O., LB **$829,256**, est. $924,326 (3 bidders), bit. pavement with aggregate base, Contr. R-4423, S-33(9, 10, 11, 14, 15), Switzerland Co.;

Ind.—**Traylor Bros., Inc.**, Upper Mount Vernon Rd., Evansville, Ind., LB **$2,342,948**, est. $2,604,111, (4 bidders), c. conc. pavement Contr. R-4425, F-153(2), Dearborn Co.;

Ind.—**Spears-Dehner, Inc.**, 1212 Clark St., Fort Wayne, Ind., LB **$967,092**, est. $1,025,928 (5 bidders) c. conc. pavement, Contr. R-4428, F-391(6), Delaware and Randolph Counties. CD 5/15.

▲† **FitzSimons and Connell Dredge and Dock, Division of Merritt-Chapmann & Scott Corp.**, 10 S. LaSalle, Chicago, Ill.,° LB **$5,800,807**, est. $6,334,465 (6 bidders) Calumet River Lock and Control Works at



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▲ **MICHIGAN**—State Hy. Dpt., John C. Mackie, hy. comr., Stevens T. Mason Bldg., Lansing,

Mich.—**A. Lindberg & Sons and Bacco Constr. Co.**, Ishpeming, Mich. CA **$2,340,678**, est. $2,300,000, grading, drainage structures, 27 ft. aggreg. base course with prime and double seal 7.712 mi. US-45 from M-26 south, F 66032 C1-R (F 193 17), Ontonagon Co.

Mich.—**Brown Brothers**, 3245 W. St. Joseph, Lansing, Mich. CA **$1,393,247**, est. $1,610,000, grading, drainage structures and dual 24 ft. concrete pavement 9 in. uniform 1.693 mi. and four bridges on US-16 relocation from US 16 east of Portland westerly to Grand River Bridge. BI 34044 C5-RN BI 34044 C6-UN 04-2 8) BI B1 of 34-14-6 C1 RN also B2 B3 and B4 (I 04-2 8), 3044, Ionia Co. Bids May 21. CD 1/28, under LB.

BUILDINGS—LB & CA

▲ **Illinois Hydraulic Constr. Co.**, 20 N. Crystal St., Elgin, Ill., CA **$1,500,000**, 1 and 2 story, 89,000 sq. ft. JUNIOR HIGH SCHOOL, ELGIN, ILL. School U-46, 353 E. Chicago Ave., Elgin, Ill. Le Roy Thompson, 353 Congdon St., Elgin, Ill., archts.

▲ **R. J. Bluett & Sons**, Central & Wolf, Mt. Prospect, Ill. Own Forces, **$5,000,000**, 230 HOMES, N. of Central Rd. and W. of Wolf Rd., near WHEELING, ILL. W. Viger, 1000 E. Northwest Hy., Mt. Prospect, Ill., archt.

▲ **Beckering Constr. Co.**, 2140 Horton St. S.E., Grand Rapids, Mich., LB **$2,081,000**, PLANT, Walker Rd. Northwest, GRAND RAPIDS, MICH. Bissell Carpet Sweeper Co., 210 Erie N.W., Grand Rapids, Mich. Bids May 23. CD 5/7.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
June 19 Nebraska
STREETS AND ROADS
June 19 Nebraska

HEAVY CONSTRUCTION—LB & CA

▲ **Long Lines Dpt., A. T. & C. Co.**, 195 Broadway, New York, N. Y., CA **$9,000,000**, constr. Electronic Expressway to carry network television programs from Des Moines, Iowa to Minneapolis with towers at Glenville, Hartland, Medford and Lonsdale, Minn.; CA **$1,800,000**, microwave radio relay sys. in 45 mi. radius around Twin Cities requiring four towers from 187 to 350 ft. in height near Zimmerman, Wyo., Hudson and Red Wing, Minn., MINNESOTA, IOWA and WISCONSIN. Northwestern Bell Telephone Co., 224 South Fifth St., Omaha, Neb.

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, Bids opened 5/23,

Mo.—**J. A. Tobin Constr. Co.**, 3701 Rainbow Blvd., Kansas City, Kan., LB **$1,331,229** (7 bidders), graded earth 5.621 mi., Boone Co.; LB **$80,789** (3 bidders), sewer culverts various sizes, Jackson Co.;

Mo.—**W. J. Menefee Constr. Co.**, 2500 W. 16th St., Sedalia, Mo., LB **$1,867,020** (4 bidders), and 24 ft. c. conc. pavement 11.579 mi., Wayne Co.;

Mo.—**R. B. Potashnick**, P. O. Box 423, Cape Girardeau, Mo., LB **$711,664** (5 bidders), 2-36 ft. c. conc. pavement 0.256 mi., St. Louis Co.;

Mo.—**St. Louis County Bridge & Grading Co.**, 7929 Alabama Ave., St. Louis, Mo., LB **$740,242** (6 bidders), 2-24 ft. c. conc. pavement 0.878 mi., St. Louis Co.;

Mo.—**Howard Constr. Co.**, 1504 N. Osage, Sedalia, Mo., LB **$1,388,445** (8 bidders), graded earth 8.52 mi. Buchanan Co.;

Mo.—**R. G. Aldridge**, 1610 Nebraska Ave., Kansas City, Kan., LB **$1,472,424** (3 bidders), c. conc. pavement variable width 6.9 mi., Marion Co. CD 5/10.

▲† **P. S. Lord Mechanical Contractors, Inc.**, 4507 SE Milwaukee Ave., Portland, Ore., LB **$1,554,173**, est. $2,413,915 (9 bidders) powerhouse switchyard, Units 4 and 5, Garrison Dam and Reservoir, ENG-32-015-58-30, Riverdale, NORTH DAKOTA. U. S. Eng., Riverdale, N. D. Bids May 27. CD 4/17.

▲ **KANSAS**—State Hy. Comn., State Office Bldg., Topeka,

Koss Constr. Co., Pauline, Kan. CA **$1,324,900**, concrete pavement 9.663 mi. beginning at Shawnee-Wabaunsee County line, thence easterly on addnl. lanes US-40 Interstate, SP 40-89 I 01-5 (32), Shawnee Co.; CA **$813,976**, c. conc. 5.853 mi. beginning at Wabaunsee Shawnee Co. line, thence west on W. B. Lanes US-40 Interstate. SP 40-00 I 01-5 (33) Wabaunsee Co. Bids May 22. CD 6/2, under LB.

▲ **Southwestern Bell Telephone Co.**, c/o Auditorium Circle, San Antonio, Tex. Owner Builds. **$2,200,000.** laying 158 mi. underground cable between San Antonio and Laredo, TEXAS. CD 5/29.

▲† **Trinity Constr. Co., Inc.**, 3703 Lemke St., Houston, Tex. CA **$3,191,254.** rectification and imprvs. to portion Brays Bayou, Almeda to Old Main and Chimney Rock Rd. to Richmond Rd., Houston, Harris Co., ENG-41-243-58-48, TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids May 20. CD 5/28, under LB.

▲† **J. A. James & Co.**, Ruston, La. LB **$1,909,333** est. $1,883,242, operational runway aprons at Perrin Air Force Base, ENG-34-066-58-60, SHERMAN, TEX. U. S. Eng., P. O. Box 61, Tulsa, Okla. Bids May 27. CD 5/5.

BUILDINGS—LB & CA

▲† **Modern Home Mfg. Corp.**, Drawer U, Biwabik, Minn. and **Fowler-Veranth Constr. Co.**, 303 South 1st Ave. East, Duluth, Minn. LB **$3,740,000** (3 bidders), Capehart Housing, Capehart Title VIII, 240 family-type DWELLINGS, duplex and row houses, single units at Arrowhead Rd. and Blackman Ave. off Military area at Duluth Air Force Base, DULUTH, MINN. Base Procurement Officer, 343rd Fighter Group (ADEF) U. S. Air Force, 510 Fidelity Bldg., Duluth, Minn. Bids May 22.

▲ **St. Louis County Housing Auth.**, **Robert T. Tracey**, exec. dir., 1306 Civic Center Dr., Lemay 23, Mo., contract cancelled, 350 unit housing project, JEFFERSON BARRACKS (St. Louis 23, P. O.), MO. **$3,569,100.** CD 12/19, under CA.

▲ **Martin K. Eby Constr. Co.**, P. O. Box 1679, Wichita, Kansas. CA Est. **$2,500,000,** cost plus, CRUSHER PLANT, located in quarry, roads, drives, bins and accessories for crushing raw cement materials, Pontotoc Co., ADA, OKLA. Ideal Cement Co., Denver National Bank Bldg., Denver, Colo. Awarded May 19. CD 4/15.

▲† **Walsh & Lewallen Constr. Co.**, 201 American National Bldg., Shawnee, Okla., CA **$3,741,142**, est. $2,000,000, constr. 230-unit family Capehart HOUSING, Vance Air Force Base, IFB 34-600-58-40, ENID, OKLA. Base Contracting Dpt., Enid, Okla. Bids May 20, CD 5/28, under LB.

▲ **W. L. Constr. Co.**, 1916 Broadway, 3, Oklahoma City, Okla., CA **$1,563,635,** COMMUNICATIONS and ELECTRONICS BLDG., Fort Sill Training Center, ENG-34-066-58-52, FORT SILL, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids May 14, awarded May 27. CD 5/21, under LB.

▲ **Austin Co.**, c/o M&M Bldg., Houston, Tex., CA **$1,800,000,** DEPARTMENT STORE, Griggs Rd. and S. Park Blvd., HOUSTON, TEX. Montgomery Ward & Co., 6200 S. John St., Kansas City, Mo. CD 6/4.

▲† **U. S. Eng.**, P.O. Box 867, Little Rock, Ark. cancelled bids to have been opened May 28, polysulfide propellant facilities, Longhorn Ordnance Works, ENG-03-050-58-49, MARSHALL, TEX. Est. **$3,000,000.** CD 4/23.

▲† **U. S. Eng.**, Box 1538, Albuquerque, N. M., rejected bids Apr. 28, INSTRUMENTATION ROADS, White Sands Proving Grounds, INV. ENG-29-005-58-97, LAS CRUCES, N. M., **$1,827,542.** **(Correction—status).** CD 6/3, under CA.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 2 California
STREETS AND ROADS
July 25, 26, July 2 California

BUILDINGS—BA

▲ **Utah, Roy**—INFIRMARY, etc.—BA 6/24—Bd. Comrs. Weber Co. City-County Bldg., Ogden, infirmary and chronic disease hospital. $1,500,000-$1,700,000. Plans deposit $100. Keith W. Wilcox & Assoc., 410 Kiesel Bldg., Ogden, archt. CD 5/31/57.

▲ **Calif., Ontario**—SCHOOL—BA 6/26—Chaffey Union High School Dist., 1245 N. Euclid Ave., high school plant to be known as Montevista High School in Montevista. $2,300,000. CD 3/4.

HEAVY CONSTRUCTION—LB & CA

▲ **ARIZONA**—State Hy. Comn., Phoenix,

San Xavier Rock & Sand Co., Tucson, Ariz. CA Est. **$1,771,742**, (7 bidders), grading, draining 1.6 mi. from point 0.3 mi. north of West Speedway and extending south over Alt. Rte. 84, on Tucson Freeway, incl. 3 grade separation structures, Pima Co. Bids May 23. CD 5/6.

▲ **Good Fellow Brothers**, Wenatchee, Wash., LB **$1,889,895** (8 bidders), highway and rail relocation at Rocky Reach Dam, near Wenatchee, WASHINGTON. Chelan County Public Utility Dist., Wenatchee, Wash. CD 2/2/55.

▲† **L. F. Stilwell, Inc.**, 8230 Beverly Rd., Los Angeles, Calif. CA **$1,413,989**, est. $1,500,000, constr. Regulus II facilities at Naval Air Missile Test Center, Spec. 9972-56, POINT MUGU, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Apr. 29. CD 5/2, under LB.

▲ **MacDonald & Kruse**, 7540 Wheatland Ave., Sun Valley, Calif. CA **$3,228,581**, imprv. Santa Ana River Channel, E-1, part 1, SANTA ANA, CALIF. Orange County Flood Control Dist., Courthouse, Santa Ana, Calif. Bids May 7, awarded May 30. CD 5/13, under LB.

▲ **Frazier-Davis Constr. Co.**, 1319 Mackland Ave., St. Louis 10, Mo. LB **$5,175,135** (11 bidders) constr. 4 mi. 14 ft. diam. tunnel for Upper American Proj., SACRAMENTO, CALIF. Sacramento Municipal Utility Dist., 2101 K St., Sacramento, Calif. Bids June 3. CD 4/28.

BUILDINGS—LB & CA

▲† **General Investment Co.**, Longview, Wash. LB **$3,060,000**, (5 bidders), 200 units Capehart family HOUSING at Larson Air Force Base, Inv. 11-626-58-5CH, MOSES LAKE, WASH. Procurement Officer, Larson Air Force Base, Moses Lake, Wash. Bids June 3. CD 5/19.

▲ **L. W. Johnson**, 1266 Mercer St., Seattle, Wash., and **Morrison-Knudsen Co.**, 319 Broadway, Boise, Idaho, LB **$2,825,000,** (8 bidders), LIBRARY, SEATTLE, WASH. Seattle Library Bd., 1631 7 Ave., Seattle, Wash. Bids June 3. CD 5/15.

▲† **Hickman Bros., Inc.**, 3170 E. 11th St., Los Angeles, Calif. LB **$1,203,900** (5 bidders) CENTRAL HEATING SYS. at Camp Margarita, Marine Corps Base, Spec. 11686-57, CAMP PENDLETON, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids May 28. CD 4/28.

▲ **M & K Corp.**, 519 California St., San Francisco, Calif. LB **$1,498,000** general contract 2 story bsmnt., Type I constr. poured in place concrete COURTHOUSE, MODESTO, CALIF. Stanislaus Co., c/o County Clerk, Modesto, Calif. Bids May 28, CD 5/6;
Hilp & Rhodes, 918 Harrison St., San Francisco, Calif. LB **$1,509,433**, segregated contract. (Modesto, Calif.)

▲ **Fluor Corp.**, 2500 Atlantic, Los Angeles, Calif. CA Est. **$33,000,000**, design and constr. 40,000 b/d catalytic cracker at REFINERY, RICHMOND, CALIF. Standard Oil Co. of California, 30 Rockefeller Plaza, New York 20, N. Y. CD 6/14/57.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 3 New Brunswick
STREETS AND ROADS
July 18, July 2 Ontario

BUILDINGS—BA

▲ **Que., Montreal**—SCHOOL—BA 6/17—Montreal Catholic School Comn., 3737 Sherbrooke St. E., high school, Cote St. Luc Rd. near Decarie Blvd., $1,500,000. Dufresne & Boulva, 1275 Hodge St., Laurent, archts. CD 4/17/56.

HEAVY CONSTRUCTION—LB & CA

▲ **Campion Pipeline Servies, Ltd.**, Head Office, Box 4065, South Edmonton, Alta., CA Approx. **$1,868,000**, gas distribution systems in North Bay, (211,000 ft.) 49,000 ft. Sturgeon Falls; 126,000 ft. Kirkland Lake, 23,000 ft. Englehart; 57,000 ft. New Liskeard, 70,000 ft. Haileybury, 44,000 ft. Cobalt; of 2- to 8-in. pipe line, Kirkland Lake, ONTARIO. Northern Ontario Gas Co. Ltd., 170 University Ave., Toronto, Ont. Awarded May 23. CD 11/1.

▲ **Peacock & McQuigge Ltd.**, 1109 Millwood Rd., Toronto, Ont., LB **$1,672,686,** (9 bidders) Don Valley Parkway, bldg. demolition, grading, drainage, retaining walls, river relocation, incl. check dams, Chester Hill interchange and steel bridges over Bloor ramp, Pottery Rd. and Beechwood Dr. (incl. paving relocation, placing pit, run gravel pavement course on Don Valley Parkway and Bloor Ramps, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St., Toronto, Ont. Fenco-Harris, 8 Spadina Rd., Toronto, Ont. engrs. Bids May 26, CD 5/19/5.

BUILDINGS—LB & CA

▲ **Bird Constr. Co. Ltd.**, 12525 17th Ave., Edmonton, Alta., LB **$5,261,066** (14 bidders) FEDERAL HOUSING: federal bldg., single staff quarters; Royal Canadian Mounted Police Bldgs.; laundry and warehouse; fire hall; hospital; nurses' and ward aides' residence; garage, workshop and morgue at new townsite, AKLAVIK, NORTH WEST TERRITORIES. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids May 28, CD 4/14.

▲ **Frank Ross Constr. Ltd.**, 8475 Decarie Blvd., Montreal, Que., LB **$17,328,000** (6 bidders) SHOPPING CENTER, bounded by Cote des Neiges, Barclay, Legare and MacKenzie Aves., with supermarket and other stores in large dome structure with underground parking facilities, MONTREAL, QUE. Amerstam Development Corp., c/o Durnford, Bolton, Chadwick & Ellwood, 4101 Sherbrooke St. W., Montreal, Que. Foundation of Canada Eng. Corp. Ltd., 1980 Sherbrooke St. W., Montreal, Que., engrs. **(Correction—low bidder).** CD 5/13, under LB.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲ **Delong Corp.**, Anchorage, Alaska. LB **$5,729,869** (6 bidders) 600 ft. dock and port facility, railroad trestle, hy. approaches, dredging 4 cranes ANCHORAGE, ALASKA. City, City Hall, Anchorage, Alaska. Bids May 29. CD 4/15.

▲† **B-E-C-K Constructors & Assocs.**, 3647 Stone Way, Seattle 3, Wash., LB **$3,020,431**, est. $3,295,805, (9 bidders), constr. NIKE guided missile installation, involving 5 large frame and or concrete structures with utilities, roads, etc. Inv. 58-36, LADD AIR FORCE BASE, ALASKA. U. S. Eng., 1519 S. Alaskan Way, Seattle, Wash. Bids May 29. CD 5/20.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

†▲ **McDonough Constr. Co. of Florida**, 8247 S. Dixie Hy., Miami, Fla., U. S. A. LB **$2,411,054** const. buildings and related facilities at Kindley Air Force Base, BERMUDA. U. S. Eng., Eastern Ocean Dist., New York 13, N. Y., U. S. A. Bids May 27. CD 5/22.

(Proposal Advertisement see pp. 143 to 145)

Are You Preparing *Now* For The Next Boom?

America's leading companies are not sitting on their hands waiting for the recession to end. They are planning ahead ***now*** for higher sales and near-capacity rates of operation.

These facts stand out clearly from the eleventh annual survey of Business' Plans for New Plants and Equipment just completed by the McGraw-Hill Department of Economics:

- **Manufacturing companies expect their sales to increase 20%, on the average, from 1958 to 1961.** Growth industries, such as chemicals and electrical machinery, expect gains of 25% to 34%.
- **If these sales gains are achieved, the average rate of operations in manufacturing will rise from 78% at the end of 1957 to almost 85% by 1961.** This is the point at which pressure on costs begins to mount, as less efficient facilities are pressed into service.
- **Industry is not waiting for this point to begin getting its plants and equipment in shape for the next boom.** Despite record expansion in the past several years, many manufacturing companies plan to add new capacity in each of the next four years. But, more important, they are going ahead with the vital job of modernization and cost-cutting.

In the years immediately ahead almost two-thirds of capital investment will go for modernization and replacement of present plants and equipment. In this way manufacturing companies can avoid the higher costs and the squeeze on profits that occur when producing facilities are not in shape to handle an increase in sales volume.

These are the plans, as reported to McGraw-Hill, of a wide sample of manufacturing companies—for the most part, large firms and leaders in their respective industries. Altogether, these firms account for almost 40% of all employment in manufacturing industries.

Now Is The Time

How do your plans measure up? Are you planning ahead now for a 20% sales increase in the next three years? Is your company planning to modernize its buildings and equipment more rapidly than at any time in the recent past? If not, here are some of the inducements that McGraw-Hill editors report from their continuous checking on the state of business.

(1) **There are plenty of opportunities for increasing efficiency by the installation of new equipment and the improvement of layouts in plants, warehouses and offices.** Despite the installation of tremendous volumes of metalworking equipment in recent years, according to AMERICAN MACHINIST over half of the machine tools now in U. S. factories are over 10 years old. Replacement of worn-out and obsolete equipment will mean material savings in operating and maintenance costs.

(2) **Machinery, parts, materials and labor are much more readily available now than they are when the economy is running at full steam.** You can be more particular about quality and about specification to meet your own requirements.

(3) **With lower interest rates and less competition for loans, it is both easier and cheaper to borrow money to finance equipment and construction.** To wait for another boom is to run the risk of having to pay higher interest rates and look harder for money.

(4) **Although there is an adequate supply of most types of labor available now, the prospect is that the supply of factory labor over the years ahead will be tight.** In 1965, there will actually be fewer men and women between the ages of 25 and 44 than there are now. Good factory workers will be either hard to get, or wage rates will rise sharply or—more likely—both. The best answer is to anticipate the rise in labor costs by installing more efficient equipment to increase labor productivity.

(5) **Finally, the costs of investing in new buildings and improved equipment *now* are almost surely less than they will be later.**

These are some of the reasons why many leading firms find ***now*** the best time in years to start on a program of plant modernization. There are other good reasons in the many new products and processes coming from the boom in research and development. This year industry will spend over $8 billion on R & D—$1 billion more than in 1957. And a heavy share of the new product development will consist of better machines and processes to be made available during the next few years. Already the pace of technical advance is so rapid as to call for modernization of plants built only a few years ago.

Years of Opportunity

It has been said that the years between now and 1961 are the "middle years" between two booms. This does not mean a long period of recession, but a period of slower growth—a transition from the postwar boom based on deferred demand, to a new boom in the 1960s based on dynamic population growth and a revolution in technology.

If so, these are the years of opportunity for business—opportunity to prepare for the growth that lies ahead with the most efficient equipment, the most modern plant and the best production organization that can be devised. This is the way to fight higher costs and avert a resumption of inflation. This is also the way to ensure that your company will be ready for its new markets in the 1960s.

Are you planning ahead ***now*** to be among the leaders?

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C McGraw
PRESIDENT

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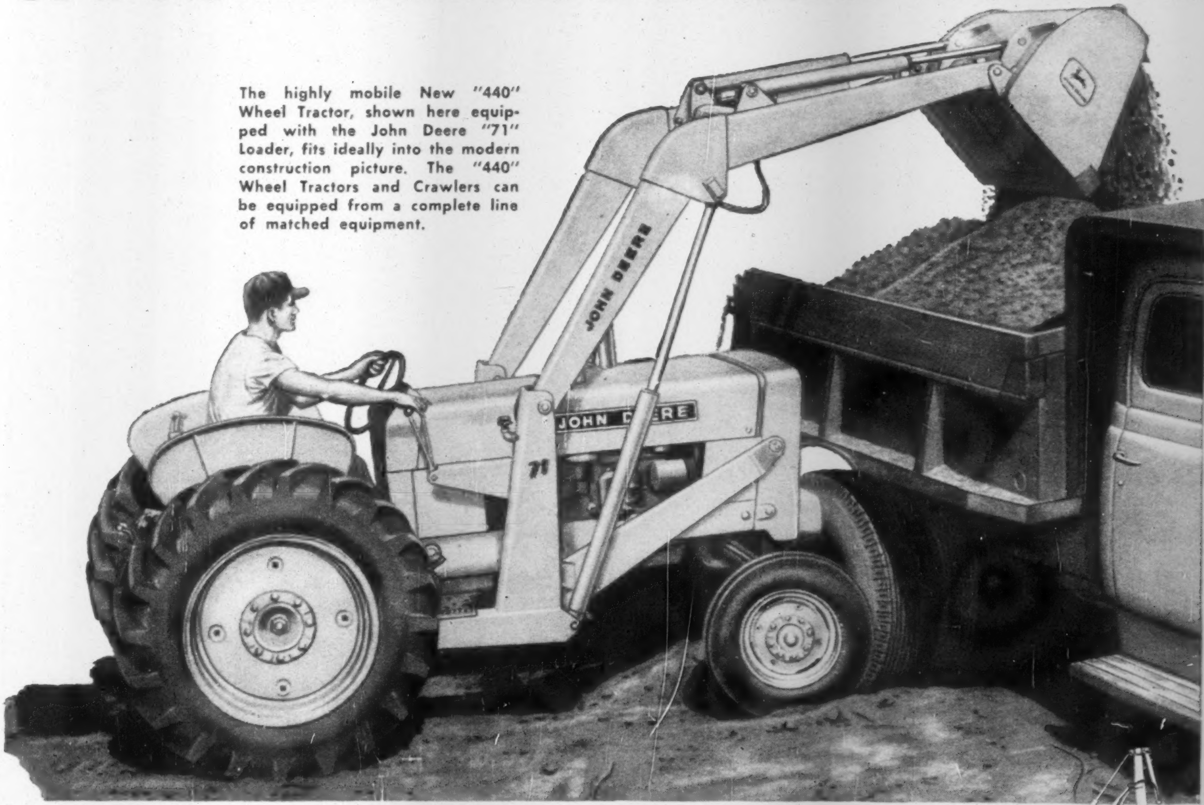
Never Underestimate the

WORK CAPACITY

of a JOHN DEERE *Industrial* TRACTOR



The highly mobile New "440" Wheel Tractor, shown here equipped with the John Deere "71" Loader, fits ideally into the modern construction picture. The "440" Wheel Tractors and Crawlers can be equipped from a complete line of matched equipment.

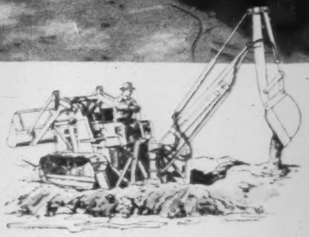
THE amazing quality about John Deere Industrial Tractors is their ability to turn out an amount of work far "above and beyond the call of duty."

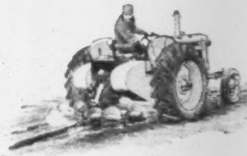
Contractors and builders are constantly finding that they can assign to these trim, efficient wheel tractors and crawlers jobs previously thought suitable only for much larger, more expensive units. And now, as John Deere owners, they are counting the benefits in dollars—dollars saved in the initial price as well as in fuel, maintenance and servicing costs.

John Deere Industrial Tractors are rugged, not-to-be-babied power units with an almost unbelievable capacity for work, yet boasting all the nimbleness and versatility necessary in the construction field.

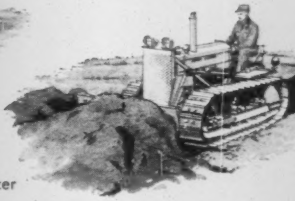
And you have four John Deere models from which to choose—the new heavy-duty "440" and the long-proved "420" in both wheel and crawler models.

The "440" Crawler with Backhoe





"440" Wheel Tractor with Trencher



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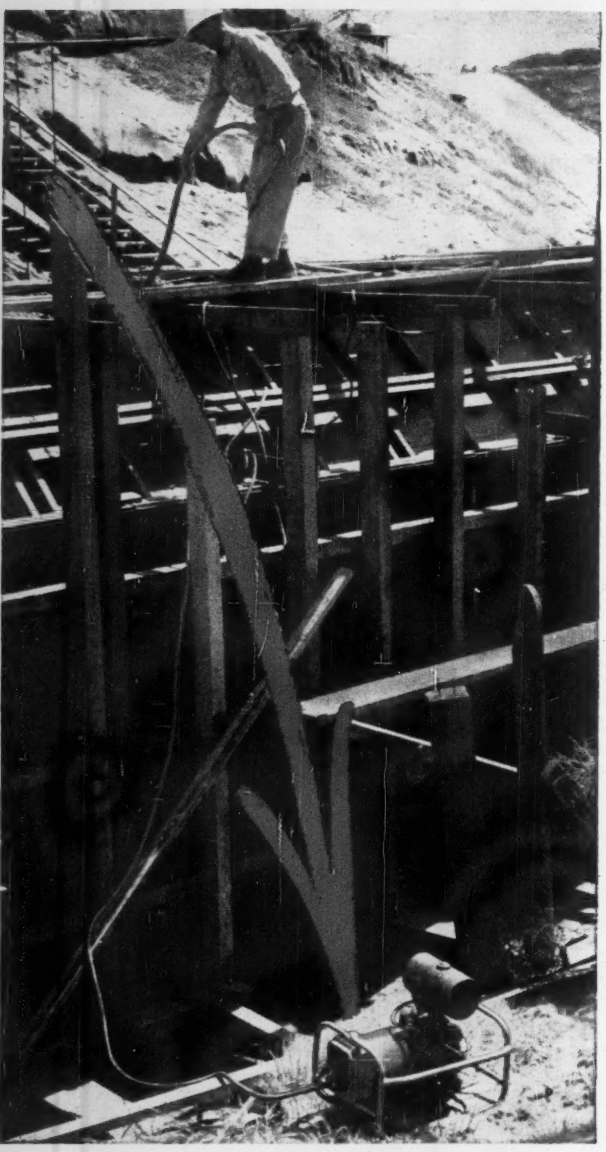
only the vibrator goes up on the form



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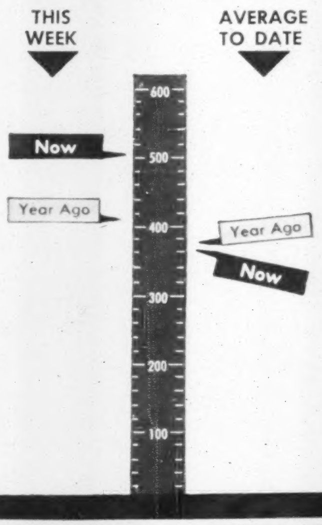
Construction Scoreboard

ACTIVITY THIS WEEK

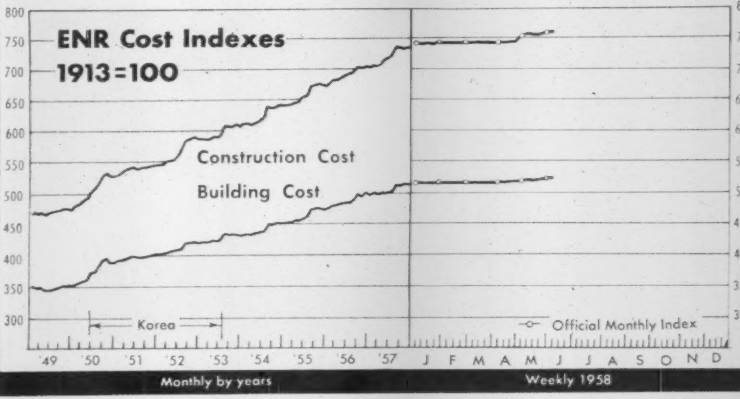
Contract Awards
Millions of Dollars



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of June 5 1958	% Change from May 8 1958	% Change from June 6 1957
Construction Cost	757.55	+0.27	+4.78
Building Cost	521.53	+0.38	+3.36

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week millions	Cum. 24 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$505.5	$8,715.1	—0.3
Private	200.6	3,910.8	—4
Public	304.9	4,804.3	+3
State & Municipal	196.2	3,544.2	+5
Federal	108.7	1,260.1	—3
By Type of Work			
Public			
Waterworks	6.1	146.0	—22
Sewerage	10.2	264.2	+12
Bridges*	9.3	237.6	—28
Highways	60.6	1,354.0	—4
Earthwork, Waterways	117.3	542.1	—4
Buildings, Excl. Housing	35.9	1,194.1	+17
Housing	22.7	512.0	+61
Unclassified	42.8	562.8	—4
Private			
Mass Housing	83.8	1,769.4	+22
Commercial	16.9	958.2	+20
Industrial	80.8	950.8	—41
Unclassified	19.1	223.9	—2

* Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of June 5 millions	Cum. 23 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$111.8	$2,532.9	—6
State and Municipal:			
All Except Housing	129.2	3,339.5	+32
Housing	3.5	23.8	—43
Federal Loans	1.7	82.5	—22
Federal Aid	...	....	...
Total Nonfederal	$246.1	$5,978.6	+6
Federal Appropriations:			
Projects in U. S.	...	$603.2	...
Outside U. S.	...	....	...
Total New Capital	$246.1	$6,581.8	+17

CONTRACTS AWARDED

	1958 May (millions)	1958 5-Mos. (millions)	% Change from 1957 May	% Change from 1957 5-Mos.
Total U. S., ENR reported	$2,313.7	$7,728.3	+25	— 2
Private	973.3	3,538.6	+21	+ 4
Public	1,340.3	4,189.7	+27	—0.3
State and Municipal	930.5	3,174.1	+31	+ 7
Federal	409.9	1,015.6	+20	—18
ENR Volume Index, 1913 = 100	674	519	+22	— 5

NEW CAPITAL FOR CONSTRUCTION

Total U. S.	$1,333.1	$6,335.7	+ 1	+15
State and Municipal Bond Sales	865.5	3,230.6	+52	+29
Corporate Security Sales	456.9	2,421.1	—0.04	— 8
Federal Loans, Aid (nonfederal work)	10.7	80.8	—96	—77
Federal Appropriations (federal work)	....	603.2	....	+..

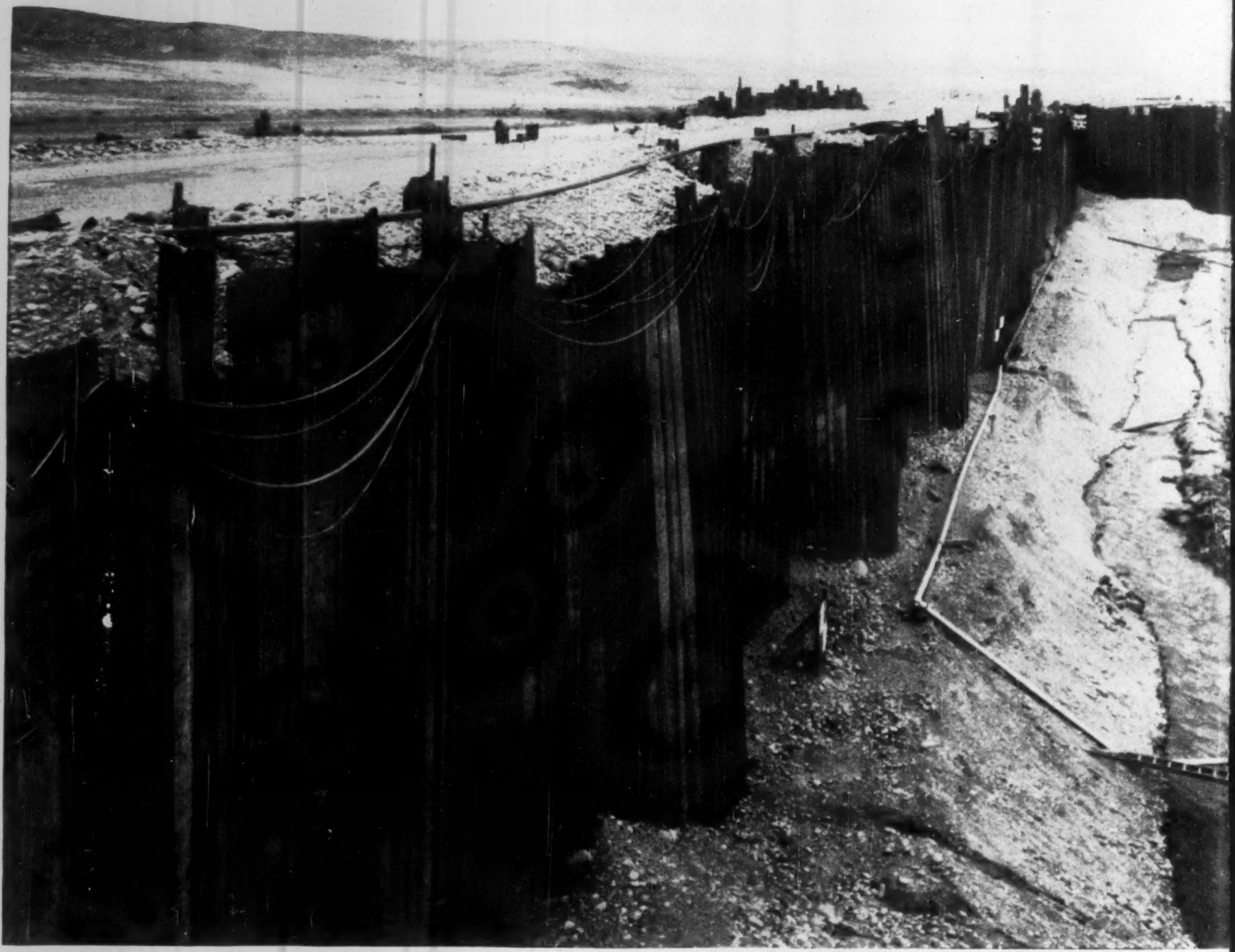
MATERIALS SHIPMENTS

	Unit	1958 Feb. (F) Mar. (M) Apr. (A)	1958 Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Percent Change from Year Ago Cum.
Portland Cement, Bur Mines	thous bbls	17,370(M)	41,932(3)	—15	+12
Concrete Paving Awards, PCA	thous sq yd	13,328(A)	30,923(4)	+70	— 3
Fabricated Structural Steel,	thous tons	324(A)	1,259(4)	—11	— 4
Bookings, AISC	thous tons	208(A)	752(4)	—48	—14
Reinforcing Bars, Net, AISI	thous tons	176(A)	542(4)	—19	—11
Lumber, NLMA	mil fbm	2,746(A)	10,054(4)	— 9	— 7
Orders	mil fbm	2,847(A)	10,109(4)	— 7	— 9
Production	mil fbm	2,590(A)	9,901(4)	—12	—10
Douglas Fir Plywood, DFPA, 3/8" basis					
Production (average per week)	mil sq ft	100.3(A)	109.0(4)	—15	+ 7
Orders (average per week)	mil sq ft	117.4(A)	112.0(4)	+ 9	+12
Clay Products, Bureau of Census					
Brick, Unglazed Common, Face	mil bri	269.5(F)	617.2(2)	—27	—10
Vitrified Clay Sewer Pipe	thous tons	72.3(F)	173.3(2)	—35	—21
Structural Tile, Unglazed	thous tons	30.7(F)	67.9(2)	—30	—25
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	3,537.8(M)	9,012.6(3)	+ 6	—20
Asphalt Siding	thous sales sqs	55.6(M)	171.7(3)	—24	—35
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	70.2(M)	203.9(3)	— 9	—12
Wire and Cable	mil lbs	20.3(M)	62.6(3)	—16	—14
Extruded Shapes (soft alloys)	mil lbs	45.9(M)	139.1(3)	—10	— 3

EMPLOYMENT AND FAILURES

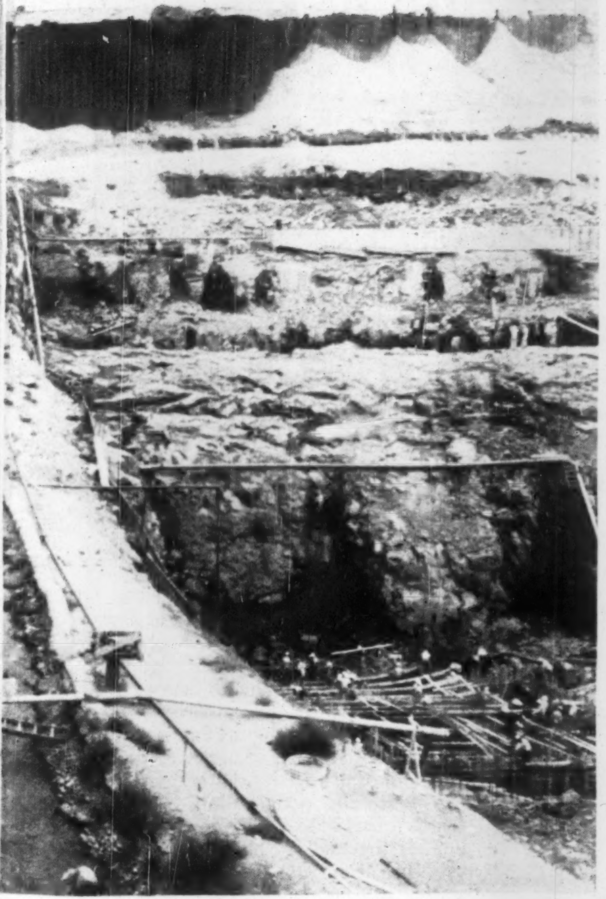
Contract Const Employment, BLS	thous	2,748(A)	2,564(4)**	— 5	— 7
Contractor Failures, Dun & Bradstreet					
Number		209(A)	764(4)	+22	+ 4
Liabilities	thous	$9,612(A)	$40,148(4)	+ 6	+ 4

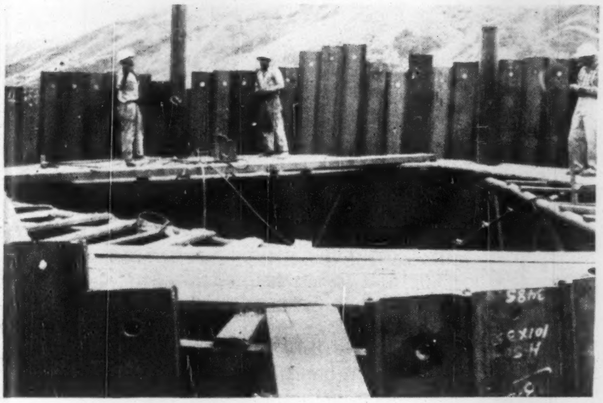
**Average per month



4,665 tons of USS Steel Sheet Piling are being used to construct this huge cofferdam, by the prime contractor Merritt-Chapman & Scott Corp. of New York, to divert the Columbia River in the building of Priest Rapids Dam.

Steel Sheet Piling helps change Indian territory into an industrial district





Close-up of one cell of the cofferdam showing tight interlocking piling driven around a template.

The huge Priest Rapids Dam, near Ephrata, Washington, is designed to supply power for the growing industry of the Northwest.

Curious Indians from the nearby Wanapum Reservation, who often have difficulty setting even a fence post in the hard, rocky soil, watch with awe as a huge, steam-powered pile driver hammers foot after foot of USS Steel Piling into the hard earth.

Some 4,665 tons of USS Steel Sheet Piling are being used in a temporary cofferdam which will divert the waters of the Columbia River and permit work to proceed on the $92,000,000 Priest Rapids Dam. This project is being built by the Public Utility District of Grant County, Washington.

The dam will be 9,545 feet long and have a maximum height of 178 feet. It will have a concrete center section 2,427 feet long with about 7,000 feet of earthen embankment. When completed it will contain ten generating units, each with a capacity of 83,000 kva.

USS MP-101 straight-web piling was used in the cofferdam to obtain maximum strength in tension. Piles in lengths from 35 to 50 feet were driven from 5 to 20 feet to solid footing.

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Capital Outlays to Slip 17% This Year

Estimated expenditures of $30.8 billion show a $1.2 billion drop from plans reported in March

Business executives are continuing to reduce their spending plans for new plant and equipment, but quarterly figures indicate that the rate of decline may be leveling out.

These trends are revealed in the latest survey of investment plans, taken by the U.S. Commerce Department and the Securities and Exchange Commission. The survey is based on the intentions of business executives in late April and May.

In January and February, when a similar survey was taken, businessmen expected to spend $32 billion on new plant and equipment during the year. This would have been a 13% decline from 1957.

In the latest survey, expenditures for 1958 are planned at a $30.8-billion level, a drop of nearly 17% below 1957.

• All but one drop—The declines are spread through every industry category with the exception of public utilities. This group expects to increase its investments over 1957 by some 2%.

Biggest reduction is being planned by durable goods manufacturing, where the recession has been particularly acute: Outlays topped $8 billion last year; present plans call for $5.7 billion this year, a drop of 29%.

Non-durable manufacturing is dropping, but not as much. From $7.9 billion last year, expenditures are expected to shrink to $6.3 billion, a 20% reduction.

The biggest percentage drop is being posted by the hard-hit railroad industry, which is fighting for special relief in Congress. Spokesmen have warned that their investment will be cut one half for the year unless aid is forthcoming. The industry is practically at that point now. Its plans, as revealed in the survey, call for a 47% slash from 1957.

• Commercial group is stable—The big "commercial and other" category is showing more stability than business as a whole. It includes trade, service industries, finance, construction firms and communications. In 1957, spending by this group hit $10.4 billion; it'll probably reach $9.3 billion by the end of 1958. This 11% drop is the lowest for any of the big-spending categories.

If the expected outlays for 1958 are borne out, the decline will continue through the fourth quarter. Here are indicated quarterly expenditures for the year: first quarter, $8.1 billion; second quarter, $7.84 billion; third quarter, $7.58 billion; fourth quarter, $7.25 billion.

• Last quarter could shift—Government analysts are wary of drawing conclusions about the fourth quarter, however. It always is the most volatile of the year, because businessmen shift their expenditures up or down in accordance with the year-end outlook. If business shows the broad improvement most administration economists are predicting, then investment plans might be increased in the fourth quarter.

A leveling-off of the decline is shown by quarter-to-quarter changes as posted by businessmen. In the first quarter of this year, the actual drop from the fourth quarter of 1957 was $960 million. If the findings of the survey hold up, the drop will be much less the rest of the year: $26 million in the second quarter, the same amount in the third, with $33 million tentatively indicated for the fourth.

Here's a Breakdown of Capital Spending Plans

(SEC-Commerce estimates in millions of dollars)

	1957	1958	% Change 1957–58	March '58 Estimate	% Change Quarterly
Total—All Industry	**$36,962**	**$30,770**	**−16.8**	**$32,074**	**−4.1**
Manufacturing	**15,959**	**12,039**	−24.6	13,196	−8.8
Durable-goods industries	8,022	5,710	−28.9	6,225	−8.3
Iron and steel	1,722	1,181	−31.4	1,266	−6.7
Nonferrous metals	814	462	−43.2	470	−1.7
Electrical machinery & equipment	599	531	−11.4	563	−5.7
Machinery except electrical	1,275	1,041	−18.4	1,178	−11.6
Motor vehicles & equipment	1,058	687	−35.1	768	−10.5
Transportation equipment, excl. motor vehicles	544	401	−26.3	460	−14.7
Stone, clay & glass products	572	408	−28.7	448	−8.9
Other durable goods[1]	1,438	999	−30.5	1,072	−6.8
Nondurable-goods industries	7,937	6,329	−20.3	6,971	−9.2
Food and beverages	850	714	−16.0	763	−6.4
Textile mill products	408	252	−38.2	252	......
Paper & allied products	811	570	−29.7	622	−8.4
Chemicals & allied products	1,724	1,388	−19.5	1,621	−14.4
Petroleum & coal products	3,453	2,837	−17.8	3,106	−8.7
Rubber products	200	163	−18.5	170	−4.1
Other nondurable goods[2]	491	405	−17.5	437	−7.3
Mining	1,243	936	−24.7	1,058	−11.5
Railroads	1,396	735	−47.3	868	−15.3
Transportation, excl. rail	1,771	1,470	−17.0	1,440	+2.1
Public utilities	6,195	6,294	+1.6	6,414	−1.9
Communications	3,032	9,296	−10.6	9,098	+2.2
Commercial and misc.[3]	7,366				

[1] Includes fabricated metal products, lumber products, furniture and fixtures, instruments, ordnance, and miscellaneous manufacturers.

[2] Includes apparel and related products, tobacco, leather and leather products, and printing and publishing.

[3] Includes trade, service, finance, and construction.

Seattle Prepares to Finance $22 Million Water Project

Seattle plans to spend $22 million over the next three years to develop a new source of water. The project entails constructing an earthfill dam about 200 ft high and 1,100 ft long on the south fork of the Tolt River, about 25 miles east of the city.

The first stage—clearing the reservoir site, constructing an access road and building a bridge across the north fork of the river—will be financed by sale of $6 million in bonds July 8. Altogether, $22 million in bond issues have been authorized by the city.

Besides the dam, 25 miles of 54 to 66 in. pipe will have to be laid and a receiving reservoir of 60 million gal capacity built north of Seattle. The development assures the city a 90,000 gpd. addition to its water supply by 1961.

Lease-Purchase Program Ends

General Services Administration awards 26 contracts totaling $40.3 million–10 other jobs to die

Construction awards of lease-purchase jobs by the General Services Administration have come to an end. But before the program died GSA announced the signing of a building contract for the twenty-sixth federal structure in the long list approved by the Budget Bureau and the public works committees of Congress since the 1954 law took effect. At last count GSA had awarded contracts for the 26 buildings to low bidders whose tenders totaled $40.3 million.

Still hanging fire, with little chance of being advertised for bids, were 10 other planned buildings that could have been awarded this year. But GSA was prevented by its lawyers and the General Accounting Office from putting the jobs on the market.

The program had stagnated until last fall primarily because the maximum interest rate for financing of the projects was 4%. To revive lease-purchase, the Budget Bureau removed the interest rate ceiling.

Also helping to give the plan a boost was the opinion of the Comptroller General that a reasonable variation from Congressional cost ceilings was permissible in awarding lease-purchase projects.

This reasonable margin was allowed to take care of changes in construction costs during the two years or so that had elapsed after the original approved estimates were prepared. GSA attorneys interpreted the reasonable leeway to cover a 10% increase in project costs, but no more.

• **Increased requirements**—It so happens that the 10 jobs now in suspension all exceed the 10% margin. In no case is the estimated increase the result of higher bid prices; everybody in the construction business knows that contractors have been beating down prices for the last year. Estimated cost of each of the 10 buildings has gone up for a quite different reason: At every one of the 10 locations, GSA's Public Buildings Service has had to expand the original plans to provide more space for federal government requirements that have grown larger since the first proposal was laid before the Budget Bureau and the Congressional committees.

GSA sees little chance of going ahead with the 10 jobs. It has a strong test case in hand to back this belief. One of the 10 was submitted to GAO a couple of months ago for an opinion, and the Congressional watchdog agency turned down the revised estimate. Barring an unexpected change in the attitude of the Congressional committees and their auditing agency, GSA will advertise no more lease-purchase projects for either first-step financing bids or for second-step construction tenders.

• **Killed by appropriation**—As a matter of fact, GSA's lease-purchase activities would have died months ago if Administrator Franklin G. Floete had not been more than willing to carry out Administration-approved plans to buck the avowed opposition of Congress. A year ago, powerful Rep. Robert E. Jones and his colleagues on the House Public Works Committee began pushing a direct-appropriation program to supplant lease-purchase for construction of federal buildings. And this year, the House Appropriations Committee brought the ax down hard when it reported a money bill that Congress is considering.

This appropriation measure cuts off further funds for continuing lease-purchase after July 1. It applies solely to the big approval list—98 projects costing some $700 million—of GSA and not to structures exclusively for post office use. The post office has little use for lease-purchase except in rare locations. This department gets most of its non-federal construction done to better advantage under its special long-lease powers.

Industry-City Water Deal To Cut River Pollution

Communities that draw drinking water from the Niagara River between Buffalo and Niagara Falls, N. Y., have welcomed the announcement that the City of Buffalo has approved a $6 million pollution abatement project for the Buffalo River. In an agreement with five major industries now using water from the Buffalo River (a Niagara tributary) for cooling processes Buffalo will build a pumping station on its waterfront to supply 120 million gal of raw lake water per day directly to the industrial concerns.

Water will empty into the river after passing through the cooling processes of the industries involved. When the system is placed in operation the industries no longer will use river water.

The concentration of industry, drawing water from the Buffalo River near its confluence with the Niagara, has tended to increase pollution to a point where state and federal agencies warned of a possible health menace to communities taking their water supply from the Niagara. A study by the firm of Nussbaumer, Clarke & Velzy, consulting engineers of Buffalo, said the new system would reduce organic pollution of the river by 50% and eliminate toxic and acid waste discharges.

The pumping station, to be equipped with four 40 mgd pumps, will draw water from Buffalo harbor through 1,750 ft of 96 in. steel or subaqueous reinforced concrete pipe. The water will be pumped to a million gal control tank on the Buffalo River and distributed through a system of lines, ranging from 30 to 72 in. to the plants.

Mammoth Bond Issue

$252 million waterworks expansion is approved

A $252 million bond issue for water system improvements won approval of voters in the East Bay Municipal Utility District of Oakland, Calif. The approval gives a rousing start to the American Water Works Association's campaign to raise waterworks construction to a $750 million a year level.

Proceeds from sale of the bonds, together with $31 million from operating revenues, will finance these projects.

- The third Mokelumne Aqueduct, an 80 mile, 87 in. dia steel pipeline, to cost $68.2 million, which will deliver water to the East Bay area from the district's reservoirs in the Sierras.
- Two Mokelumne River dams, to cost $42.3 million.
- A $38.9 million terminal reservoir in the East Bay area.
- Some 620 miles of distribution mains, costing $65.6 million.
- Filter plants, to cost $14.1 million, which will up treated water plant capacity 60%.
- Distribution reservoirs, to cost $26.7 million.
- Pumping plants to cost $4.2 million.

First bid call on project will be this fall—for the $6 million, 90 mgd Upper San Leandro filter plant. Second major project, slated for bid call in six to eight months, is a 30 mile section of the aqueduct.

(*B&F continued on page 136*)

Public Works Bill Faces Uphill Fight

Measure to loan communities $2 billion in federal funds opposed as deficit-builder; veto threatened

The Democrats' big anti-recession bill to provide federal loans for public works projects still has a long road to travel in Congress. But even if it clears the hurdles ahead, there is a threat of Presidential veto.

The House Banking Committee wrote the latest chapter in the scrap over the bill last week. The group by a 16-6 vote approved a $2 billion program for construction of water, sewage and sanitary facilities, hospital and public health centers, sidewalks, highways, bridges, libraries and other public buildings.

But the measure drew a blistering attack from the Republican minority voting against the measure. The minority opposed the program on two main counts:

- It would provide federal funds instead of private financing, hence adding to the already huge budget deficit shaping up for next year.
- Interest on the loans would be charged at the rate of 2⅝%, much less than the terms available in the open market.

President Eisenhower joins with the minority on these points. Also, it runs counter to the President's belief that no further large federal anti-recession measures are necessary to help the economy.

The Administration thinks the program would have little benefit as a business booster because it would take too long to get construction started. Republicans contend further that it would be a case of misdirected emphasis—that local bond financing already is one of the brighter spots in the economy with community issues at a level higher than last year.

• **Possible employment booster**—Democrats take the position that some construction could be started this year to aid business revival and that it would provide greater employment when the program really got rolling next year. The idea of a community facilities bill has been kicking around Congress for several years, and Democrats see present unsettled business conditions as a golden opportunity to push it through.

In any case, Congress seems certain to approve some form of the measure and leave it to the President to take the blame, or the credit, if he decides to block it. The forces generating passage of the bill are almost irresistible. It would pour federal money into almost every community in the country, and congressmen, running for reelection this year, would be reluctant to turn it down.

Congress, however, has no taste for a head-on clash with the President on the measure. The strategy now seems to be to delay approval until the closing days of the session when a Presidential veto could not be overturned.

The measure approved by the House committee differs in a number of important respects from the one passed earlier by the Senate. The Senate bill, sponsored by Sen. William Fulbright, would set up only $1 billion in the federal fund. The loans would carry a 3½% interest charge repayable over a 50-year period, like the House version. Both versions provide for a $400 million revolving fund.

• **No school funds**—The committee struck out a provision in the Fulbright bill that would allow the funds to go for school construction, since this would have no chance for passage anyway. It also erased a provision that would have allowed the states themselves, as well as local communities, to borrow from the fund.

The House bill also would not allow the funds to be used in construction of facilities that would compete with privately-owned utilities.

The measure, as now drawn, almost certainly would not clear the powerful rules committee. The chairman is conservative Rep. Howard Smith of Virginia, a banker in private life.

The rules group probably will force a revision in the measure to conform to the Senate bill on interest terms. When it finally emerges on the floor of the House, the loan fund probably also will have been cut to $1 billion.

Texas Highway Agency Orders "Buy American"

The Texas Highway Department, now spending more than $250 million a year, has ordered a ban on the use of all materials manufactured outside the United States, its territories or possessions. The new policy becomes effective in August.

J. C. Dingwall, assistant chief engineer of the state's highway department, says the policy was initiated for two reasons: To help the domestic steel industry including three mills in Texas, and because of fabricators' complaints about the quality of imported steel.

Mr. Dingwall says the order will not raise the cost of road construction: "Our investigation shows no savings on foreign steel has been passed on to the state." He says fabricators using imported steel may have been making allowance for waste, thus canceling price differences.

He adds that he does not believe there is any important connection between the use of foreign steel and the fact bids on highway construction projects ran below estimates last year.

"Very little foreign material was used for Texas roads in 1957," Mr. Dingwall says. Most materials used from abroad are reinforcing steel. Only about 5% of the reinforcing steel used last year in the state's highway projects was foreign. However, this year there has been "a very large increase, although no exact figures are available."

According to Mr. Dingwall, fabricators report there is no uniformity in the quality of foreign steel. "Fabricators complain that some bars will bend correctly, but others will be brittle and snap," the official says.

The policy is not expected to conflict with the requirements of the federal-aid highway program. The Bureau of Public Roads reports a state "Buy American" regulation is acceptable to the bureau, providing it does not restrict competition.

In New York City, importers say the complaint on lack of uniform quality is not generally valid because steel shipments to this country contain certificates of quality meeting American standards for grade. It includes, for both structural and intermediate steel, the chemical analyses for grade and shows the product's tensile strength, yield point and elongation. If American standards are not met, the material is rejected.

Marshall Formby, Texas Highway Commission chairman, explains that the order is subject to review should shortages of domestic materials bring sharp price hikes.

A-Power Timetable

AEC commits government to development program

The Atomic Energy Commission, after lengthy prodding by Democrats on Capitol Hill, has committed the government to a long-range program of atomic power reactor development.

The Republican-run commission still shies away from a big federal reactor building program. It prefers to give private enterprise first crack at the projects. And there may be little stepup in the reactor building program for at least another year.

For the first time, AEC publicly has laid out a timetable for achieving economic nuclear power both in this country (10 years from now), and abroad (five years). It vows that the reactors will be built by the government, at a presumed cost of several hundred million dollars, if private power companies don't come through.

Commissioners Harold Vance, John Graham and John Floberg laid out the Administration program last week before the legislative subcommittee of the Joint Committee on Atomic Energy.

The Democratic-run committee, which has long pressured AEC to "accelerate" the civilian atomic power program, is pleased with the AEC program. However, the committee will try to write more projects into the program for the fiscal year beginning July 1.

Mr. Vance explains that competitive nuclear power can be achieved in friendly foreign nations much sooner than in the U. S. because cost of conventional power generation from coal and oil is much higher abroad. But AEC agrees that, even in this country, there is a need to prepare for the day when the fossil fuels become scarce.

"A statement of long-term policy and objectives of the government on nuclear power development is desirable," says Mr. Vance, "to improve stability and facilitate planning by the industry."

The Administration bill makes a stab at outlining its five-year program, but only in vague terms beyond fiscal year 1960 because "of the rapidly changing status of nuclear power technology" (ENR May 22, p. 22).

For the fiscal year beginning July 1, AEC proposes only one big reactor construction project: a $51 million, gas-cooled reactor with a capacity of some 40,000 kw of electricity.

The commission wants to give private industry first crack at the project. However, the Joint Committee will insist on government construction—perhaps after a very short period of invitation to industry. The bill contains $193 million for nuclear construction, which Democrats are seeking to double.

The Joint Committee is expected to vote a bill out in late June. It may include authorization for three federal reactors instead of the one proposed by the Administration.

11 Jobs That Broke $100 Million

Some huge construction contracts for work within the continental limits of the United States have been let in recent years, with some of the largest involving atomic energy. Listed below are jobs reported to ENR, each topping $100 million by a generous amount. Contract amounts for the original atomic energy plants at Hanford, Wash., and Oak Ridge, Tenn., are not available.

$1,200,000,000 (final cost not on record)	**1950—Atomic Energy—**Savannah River tritium plant, Aiken, Ga., for U. S. Atomic Energy Commission, cost plus $1 a year contract to E. I. du Pont de Nemours & Co., Wilmington.
$1,200,000,000 contract $819,000,000 (final cost) (Much of this work was sub-contracted)	**1952—Atomic Energy—**Gaseous diffusion process uranium plant, Portsmouth, Ohio, for U. S. Atomic Energy Commission, to Peter Kiewit Sons Co., Omaha.
$625,000,000	**1950—Atomic Energy—**Paducah, Ky., Uranium separation plant, U. S. Atomic Energy Commission, to F. H. McGraw & Co., Hartford, Conn., and New York City.
$464,000,000	**1950—Atomic Energy—**Atomic diffusion plant, Oak Ridge, Tenn., U. S. Atomic Energy Commission, to F. Maxon Construction Co., Dayton, Ohio.
$300,000,000	**1951—Steel—**Fairless Works steel mill, U. S. Steel Corp., Morrisville, Pa., to joint venture, Walsh Construction Co., New York City and Davenport, Iowa; B. Perini Construction Co., (now Perini Corp.), Framingham, Mass.; S. J. Groves Contracting Co., Minneapolis, Slattery Contracting Co., Long Island City, N. Y.
$231,000,000	**1956—Aluminum plant—**Olin Mathieson Chemical Corp. aluminum plant at Omal, near Clarington, Ohio, to F. H. McGraw & Co., Hartford, Conn., and New York City.
$200,000,000	**1950—Atomic Energy—**Expansion atomic energy plant, Hanford, Wash., U. S. Atomic Energy Commission, to joint venture, Guy F. Atkinson Co., San Francisco; J. A. Jones, Charlotte, N. C.
$200,000,000	**1956—Steel—**Slabbing mill, East Chicago, Ind., Inland Steel Co., Chicago, to United Engineering & Foundry Co., Pittsburgh.
$200,000,000	**1956—Steel—**Openhearth and slabbing mill shops, Bethlehem Steel Corp., Sparrows Point, Md., to Koppers Co., Inc., Engineering and Construction Div., Pittsburgh.
$113,000,000	**1956—Steel—**Oxygen steel plant, slabbing mill and additions, Kaiser Steel Corp., Oakland, Calif., to Kaiser Engineers, Oakland.
$107,995,122 (Largest contract let to individual company in open competitive bidding)	**1957—Hydro Power—**Glen Canyon Dam, Arizona, Bureau of Reclamation, Denver, to Merritt-Chapman & Scott Corp., New York City.

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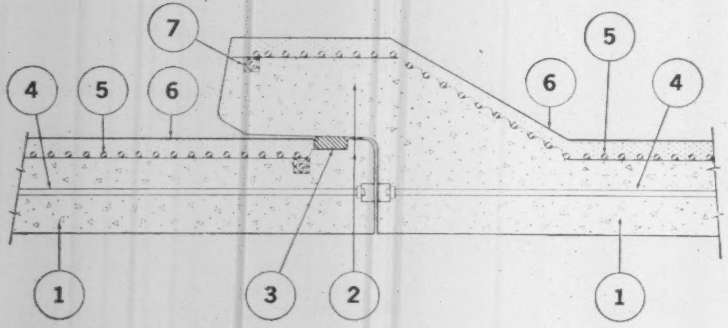

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Senate Drafts Mild Labor Reform Bill

Labor committee avoids most controversial issues—attempts to meet McClellan committee proposals

Organized labor will escape any extensive anti-racketeering curbs or other union restrictions from Congress this year.

This was assured last week when the Senate Labor Committee, by a 12-to-1 vote, approved a moderate labor anti-racketeering bill. It had the support of key senators who should be able to push it through the Senate without any major changes.

While the new Taft-Hartley amendments are aimed at controls on union officers and finances, they also include some changes actually sought by labor. Two of these are Taft-Hartley Act changes long-pressed by the AFL-CIO Building Trades Department.

Because the legislation is so mild, there is little likelihood that the House of Representatives will follow through and make a new Taft-Hartley law. The proposal lacks any urgency, and House members already have displayed disinterest in the subject for this session.

• Down the middle—Actually, the measure is hardly severe enough to cause any pangs among union leaders who had been concerned about new curbs on secondary boycotts, organizing, union security and the like. It is, as far as anti-racketeering goes, pretty much limited to checks on union financial and election behavior: requiring disclosure and policing of union funds, secret ballot elections of officers, bans on conflict-of-interest deals by union officers.

The legislative package also contains a section of amendments sought by unions, including the Eisenhower Administration's much-discussed proposal for letting economic strikers vote in union elections; and an order to the National Labor Relations Board to invade the "no-man's land" of labor cases by re-asserting its jurisdiction. These are the cases declined by the board because of size, but untouchable by the states because they involve interstate operations.

In this latter series of labor-backed proposals are the amendments sought by the building trades unions. They would:

- Permit pre-hire, seven day contracts between employers and unions in the construction industry.
- Lift the present ban on employer payments to union representatives by allowing contractors to make payments into funds providing apprentice training and pooled vacations for craft union members.

A third legislative aim of the construction unions went by the boards. The Senate Labor subcommittee, headed by Massachusetts Democrat John F. Kennedy who authored most of the bill, turned thumbs down on easing of the secondary boycott picketing ban. The proposal would have permitted craft unions to picket construction sites even when they had a dispute with only one contractor on the project.

• Union democracy—Senator Kennedy says the "primary purpose" of the bill "is to assure trade union members effective control over the operations of the organizations which represent them."

The Kennedy measure calls for: Complete disclosure of union leaders on conflict-of-interest transactions; reports by employers on any deals with middlemen directed against unions and criminal penalties for filing false reports.

It also calls for reports and limits on trusteeships, secret ballot elections of union officers and a ban on picketing for extortion or a pay-off from an employer.

The Senate Labor Committee's Taft-Hartley proposals were expected to be fairly light. The majority is composed of "friends" of labor who weren't likely to come up with curbs sought by some other senators. However, the package is more moderate than expected, and this can be explained by two developments.

The first was Sen. William Knowland's poor showing in California primaries where he's running for Republican governor on a platform to curb labor racketeering and promote union democracy. He fell far behind his Democratic rival, who ran with heavy labor support.

This took some of the steam out of the Knowland forces in the Senate, including Sens. Barry Goldwater (R., Ariz.), and Carl Curtis (R., Neb.), who wanted tight curbs on secondary boycotts, picketing, union monopoly and other matters. None of these showed up in the committee's Taft-Hartley bill. However, the trio is planning a strong Senate appeal to alter the measure.

At least as important is the position taken on the new legislation by Sen. John L. McClellan (D., Ark.), whose voice in this legislation is probably the strongest in the Senate.

Senator McClellan supported the Kennedy Committee proposals with only a few changes of his own—all accepted by the committee. When he put his stamp of approval on the measure, even though it doesn't include some more extensive checks he had talked about earlier this session, it was almost tantamount to Senate approval.

Lathers and Plasterers Sign Cost Cutting Pact

A labor-management policy to eliminate featherbedding and productivity ceilings in the lathing and plastering industry was adopted last week by the industry's national employer association and two of the international building trades unions.

The policy is contained in a national agreement signed in Toledo, Ohio, by the Contracting Plasterers and Lathers International Association, the Operative Plasterers and Cement Masons International Union and the Wood, Wire and Metal Lathers' International Union.

Basic purpose of the agreement is to prevent costly labor disputes and work stoppages stemming from the growing use of mechanized equipment.

The policy prohibits limitations on the amount of work an employee can perform and removes restrictions on labor-saving devices that are not injurious and that do not reduce the quality of work. It also requires the arbitration of grievances without strikes or lockouts.

Some of the provisions are already in effect in some parts of the country. But union officials say they will be incorporated in all future labor contracts to provide uniformity in the industry.

Other aspects of the new agreement call for:

- A full day's work for a full day's pay without bonus payments.
- Contractor use of qualified, experienced craftsmen.
- A stepped-up apprenticeship training program.

(*Labor continued on page 140*)

Big Boston Strike Is Settled

Carpenters agree to a wage boost of 40 cents in three-year contract; sizeable pay hikes occur elsewhere

A 20-day strike of 6,000 carpenters that tied up $90 million worth of construction in and around Boston ended last week. The Greater Boston Council of Carpenters settled for a three-year labor contract that grants a 40 cent hourly wage increase spread over the contract period.

Elsewhere in the nation collective bargaining negotiations presented a mixture of strikes and settlements. Many of the wage increases currently granted continued to hit 15 and 20 cent levels. There were exceptions to the rule, however. Bricklayers in Tucson, Ariz., voluntarily froze their wages until December 1, and two locals of the Lumber and Sawmill Workers Union in New Mexico rolled back their wages for the next two years.

• **Boston**—The settlement with Associated General Contractors and Building Trades Employers Association was reached in mediation. The union asked for 50 cents over two years; contractors offered 30 cents for three years. (Earlier, North Shore carpenters accepted a three-year contract granting a 32½ cent wage boost, including an additional 5 cents for health and welfare.) Under the Boston contract, the hourly rate for carpenters (now $3.25) will move to $3.65 in annual installments of 15, 15 and 10 cents.

Wage rollback for sawmill workers in New Mexico came in a two-year contract with New Mexico Lumber Co. Operations there have been shut down since early last winter because of weather and poor market conditions. Union members agreed to across-the-board wage cuts for all employees and to give up paid holidays and paid vacations. They said it was "now their turn" to sacrifice. Local AFL-CIO leaders, however, tended to look askance at the settlement. "It's a little bit contrary to the way the building trades feel about things, with the rises in the cost of living," said the state AFL-CIO president.

Less dramatic was the bricklayer wage freeze in Tucson. The union signed a two-year contract for a 25 cent wage boost—but the first installment of 12½ cents won't start until December 1. Contract also grants two hours paid voting time.

In other parts of the nation, collective bargaining negotiations were shaping up like this:

• **New York**—Over 7,500 bricklayers in seven union locals in New York City and parts of Long Island agreed to a two-year contract with the Building Contractors and Mason Builders Association granting a 55 cent wage boost in three installments—20 cents as of June 1, 20 cents next January 1 and 15 cents June 1, 1959. On January 1, welfare payments will be upped from 4% to 5%. Starting next year, Election Day will be a paid holiday—the only one the bricklayers receive. Current 20 cent pension contribution remains.

Meanwhile, operating engineers, carpenters and cement masons in Buffalo settled for 35 cents in two-year contracts—15 cents now, 5 cents in December, 10 cents next June and 5 cents December 1959. In lieu of the increases scheduled for next year, the unions have the option of taking wage increases computed on the basis of a formula using the cost-of-living index and commercial construction wage rates in eight cities similar to Buffalo. City construction, however, is still tied up by a strike of laborers, painters and lathers.

Sheet metal workers in Binghamton wound up a nine-day strike with a one-year contract for a 10 cent wage boost, plus a 10 cent pension contribution. And laborers in Rochester have signed a two-year contract that will shut down construction in Monroe County for one week next year for vacations. Union vacations will be financed by a 15 cent contribution, retroactive to May 1. The new contract also calls for a 10 cent wage increase next year.

• **Washington**—Under a new one-year contract between the Puget Sound Chapter of National Electrical Contractors Association and the electrical workers union, wages for inside wiremen will be increased 25 cents an hour July 1 to $3.65. Fringe benefits were upped 1 cent an hour to a total of 26 cents, including 15 cents for vacations, 7½ cents for welfare and 3½ cents for pensions, making the total wage $3.91.

Amounts were fixed by the Council on Industrial Relations after the union and NECA had failed to agree.

Pattern was largely set by an earlier settlement in Tacoma, where contractors gave a 25 cent wage increase effective July 1 plus another 5 cents next January 1. The 25 cent wage boost also prevailed in eastern Washington, bringing the Spokane and Pasco scales to $3.57½ and $3.65. Under the eastern contract, the apprenticeship training program was lengthened from four to five years.

• **Ohio**—Although little progress was made in Cleveland, where contractors are insisting on an economically sound settlement, the threat of state-wide strikes on highway projects was averted. Ohio Contractors Association and the Laborers District Council of Ohio agreed to a 12½ cent wage boost that gives minimum scales a range of $2.27½ to $2.83.

Painters in Columbus settled for 20 cents in three installments—10 cents retroactive to April 1, 5 cents July 1 and 5 cents October 1. But asbestos workers went on strike for a contract that would include a retirement plan and other benefits amounting to about 22 cents an hour.

• **Vermont**—Local 693 of the plumbers union in Vermont ended a 28-day strike with a two-year contract for 50 cents. Union receives an immediate hourly wage boost of 35 cents; on November 1; members will get a 15 cent increase for the balance of the contract, raising the union scale to $3.00

Boycott Is Halted

Sheet metal workers told to install Burt products

A federal court has ordered the sheet metal workers union to halt its boycott against ventilating equipment made by the Burt Manufacturing Co. in Akron, Ohio. Friction between the union and the company has plagued the construction industry for several years.

As a result of the court order, the Sheet Metal Workers', International Association has instructed its local unions to give the following notice to all employers with whom they have collective bargaining agreements:

"You are hereby notified that you are free, without fear of economic or other reprisals from any local union affiliated with the Sheet Metal Workers' International Association, to purchase, sell, use, install, handle, transport or otherwise deal in the products of the Burt Manufacturing Company of Akron, Ohio."

The court order appeared in the form of a temporary injunction issued by Judge Paul Weick in Cleveland.

Request for the injunction was made by a National Labor Relations Board regional director who has charged the union with violating four sections of the Taft-Hartley Act in its long and bitter dispute with the United Steel Workers of America.

The steelworkers union has represented Burt employees since 1945. Most of the Akron sheet metal fabrication shops are organized by the sheet metal workers, who claim the steelworkers entry into Burt was a violation of their jurisdiction and presents a continuing threat to their wage scales and working conditions (ENR Jan. 23, p. 117).

The injunction against the union will stand until the NLRB concludes its hearing on the unfair labor practice charges filed against the union.

Testimony in the injunction proceeding showed that the union required contractors to adhere to a "standard form of union agreement" banning use of products not fabricated by members of the sheet metal workers union. The fact that the union activity may have been an effort to enforce contract rights was ruled as "no defense" by Judge Weick.

Right-to-Work Law Allows Equivalent of Union Dues

The International Brotherhood of Electrical Workers, one of the AFL-CIO building trades unions, has succeeded in taking some of the teeth out of Indiana's right-to-work law.

An Indiana state court has ruled that a labor contract clause compelling nonunion employees to "pay the union an amount of money equal to that paid by other members in the bargaining unit who are members of the union" does not violate the state law.

Indiana is one of the 18 states that has exercised the option granted by the Taft-Hartley Act to outlaw the union shop. Under the typical union shop clause, new nonunion employees are required to join the union 30 days after the date of hiring. The clause is a familiar and critical device in union recruiting.

The court ruled that the clause, which IBEW was attempting to incorporate in a contract with Meade Electric Co., of Hammond, Ind., would merely compel nonunion employees to pay their fair share of representation. The payment, said the court, "is completely distinct and substantially different from compulsory membership in a union."

One of the arguments used by organized labor in its bitter opposition to right-to-work laws is that the laws give nonunion members a free ride on the coattails of labor and permit them to enjoy union-won wage scales and working conditions without sharing in the cost of obtaining them.

Sidestep Brown-Olds Remedy

National Labor Relations Board decision honors grace period for correcting hiring hall violations

Contractors have received the tacit assurance of the National Labor Relations Board that the present breathing spell for correcting hiring hall violations will continue until September 1.

In an Illinois case involving hiring discrimination, the board last month applied recently issued standards for judging the legality of hiring hall arrangements, but declined to use the controversial Brown-Olds remedy. Instead, it granted the traditional—and lighter—back pay award. This indicates a willingness to go along with its general counsel in withholding application of the more severe remedy until the September 1 deadline set by the counsel.

Case arose on an unfair labor practice charge filed by a motor grader operator who couldn't get a job with K. M. & M. Construction Co. of Mound City, Ill., because of a discriminatory and illegal hiring arrangement between the contractor and locals of the operating engineers union.

The law forbids making union membership or union clearance, referral or approval a condition of hiring. This year, NLRB took two steps to enforce the law in the construction industry:

- In a case known as the Mountain Pacific Chapter of Associated General Contractors, it declared invalid any hiring arrangement that does not embrace these three factors: hiring on a non-discriminatory basis unaffected by union rules or membership; reservation by the contractor of the right to reject any applicant referred by the union; disclosure to applicants of what the hiring procedure is.
- The board's general counsel stated that after September 1 contractors and unions violating the law will be held jointly and severally liable for all dues, fees and assessments collected by the unions while an illegal hiring arrangement is in effect. (This is known as the Brown-Olds remedy and is one of the most severe the board has devised.

In the Illinois case, the hiring arrangement failed to meet the Mountain Pacific standards and the union shop clause in the labor contract failed to include the required 30-day grace period.

The board coupled its back pay award (for which both the contractor and the unions are liable) with an order to cease discriminatory hiring practices. Under the NLRB formula, the back pay adds up to what the unhired worker would have earned if he had been given a job when he applied for work.

Workers May Get Tax Ruling

Can a construction worker deduct for federal taxes his travel and living expenses on jobs away from home.

This question will be considered by the U. S. Supreme Court when it reviews a lower court decision that denied the deduction to two out-of-town welders and a plumber. They had worked for periods of nine to 20½ months on construction of a duPont plant near Kingston, N. C.

Because of the impermanent and often transient nature of construction work, now dramatized by the number of large projects far removed from metropolitan centers, the issue has evoked keen and widespread interest. The AFL-CIO Building and Construction Trades Department, for example, has long been seeking from the Commissioner of Internal Revenue a lucid and favorable ruling that can be applied uniformly in the field offices of the Internal Revenue Service.

In the case under review, the plant site was 78 miles from the home of one worker, 122 miles from those of the other two. While on the job, the workers lived in nearby rooming houses but still maintained their homes.

The Tax Court had allowed the deductions but the Circuit Court reversed the decision. It reasoned that the Kingston work was for an indefinite period and could not qualify as temporary.

As the law now stands, the court said, living expenses on a job away from home, incurred as a convenience to the employee rather than the employer, are not deductible as "ordinary and necessary" business expenses if the employment is of "substantial or indefinite duration" rather than temporary.

The decision has been almost useless as a guide because the court did not attempt to clarify or define what it meant by "temporary", "substantial" or "indefinite".

(Labor continued on page 142)

Push-Button Work Claims Meet Vigorous Resistance

Union demands for "push button" jobs will run into stiff contractor opposition in New Jersey.

Notice has been served by the Building Contractors Association of New Jersey that it will wage a relentless war against any union assertion of the right to start and stop equipment normally operated and maintained by the craftsman who uses the equipment on the job.

The announcement, made by the association's managing director Paul J. Brienza, is intended primarily to spike any false hopes the statewide local of operating engineers union may have.

"Union featherbedding demands of jobs for men who do not perform a full day's work for a full day's pay will not be tolerated," Mr. Brienza says.

Twice in the last year, efforts of operating engineers' Local 825 to win jurisdiction over the starting and stopping of small hand-operated equipment and electric welding machines on New Jersey construction jobs have been blocked by the National Labor Relations Board.

Mr. Brienza says some of the building trades' hourly rates in the state are among the highest in the nation—$4.28 for carpenters, $4.43 for bricklayers, $4.66 for ironworkers. As a result, he says, contractors "have a moral and economic obligation to the taxpayer and the industrial and commercial owner, who are providing the money for all the building projects, to expect full productivity from each man."

Dispute Over Wages Leads To a Shutdown in Canada

The strike-torn construction industry in Canada's British Columbia faces a major shutdown. Leading contractor associations last week agreed to halt all lower mainland construction, already tied up by a plumbers' lockout.

Reason for the action, says a spokesman for the contractors, is this: "We see no alternative. Contractors cannot proceed under present conditions."

Plumbers have been locked out since April 30, following refusal of the plumbers union to accept a conciliation board recommendation of a 6 cent hourly wage increase on top of the current basic scale of $2.70. The lockout affects all construction when it reaches the plumbing stage.

In addition, the Electrical Contractors Association of British Columbia has failed to reach any agreement with the electrical workers union. Conciliation board recommendation in this case is for no pay boost for 1958.

Contractor groups that decided to halt work include the General Contractors Association, Heavy Construction Association, Electrical Contractors Association, and Master Plumbers Association.

Jobs principally affected are apartment buildings, offices, schools and residential construction.

Work Resumes in Dispute Over Nonunion Workers

Work has resumed on $20 million worth of construction work at Ohio State University under an agreement sanctioned by a federal court last week.

Work stopped when the projects were picketed by members of the electrical workers union. Union members had protested a subcontract award to a nonunion electrical contractor. Union picket lines at campus entrances were honored by other union workers and work on 14 building jobs stopped.

Contractors said the picketing caused them a loss of $5,000 a day.

The case is now before the National Labor Relations Board on an unfair labor practice charge.

Eight-Cent Wage Accords Gain in Cement Industry

Threat of a general strike in the cement industry continued to peter out last week as a wage settlement pattern established in the West moved into eastern states.

In the first of the eastern settlements with members of the cement workers union, North American Cement Corp. agreed to a one-year contract, retroactive to May 1. It grants an 8 cent hourly wage increase plus additional benefits averaging about 2 cents an hour. One Maryland and two New York plants are affected.

Lehigh Portland Cement Co. soon followed with a similar settlement for three of its eastern Pennsylvania plants.

Pattern for the 10 cent package settlement, embracing an 8 cent wage increase, was established in an earlier pact with Ideal Cement Co., Denver.

Aldermen Decide to Drop Union Disclosure in Bids

A long-standing policy that bids submitted to the city must say whether the bidder does or does not have a union affiliation has been scrapped by the City of Calgary, Alberta, Canada.

The decision was made by the City Council. Vote was seven to four.

Commented one alderman: "Unions don't need any coddling or pampering today."

OFFICIAL PROPOSALS

Bids: June 19, 1958.

New York State — City of Albany

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time on June 19, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON CROSSTOWN ARTERIAL ROUTE, BUCKINGHAM DRIVE TO WASHINGTON AVENUE, CITY OF ALBANY COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM-127.

Maps, plans and specifications may be examined and obtained at the following offices:

(a). Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) Mr. G. L. Nickerson, District Engineer, New York State Department of Public Works, 353 Broadway, Albany 1, N. Y.

(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $22,875.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reversed to reject any or all bids. JOHN W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Bids: June 17, 1958

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. on Tuesday, June 17, 1958

For Throgs Neck Bridge Contract No. TN-10A, Bronx Approach Substructure. The bid must be accompanied by a deposit in the amount of $200,000.00

and

For Throgs Neck Bridge Contract No. TN-10B, Queens Approach Substructure. The bid must be accompanied by a deposit in the amount of $200,000.00.

Bidders may submit bid for either one or both of the above contracts.

Plans, specifications and contract documents may be purchased at the office of the Authority for $30.00, which will not be refunded.

Bids: July 1, 1958.

General Construction of Illinois 2-6

We would like to have the following information advertised in the 6/12, 1958 edition of the Engineering News Record:

The Chicago Housing Authority invites properly qualified bidders to submit figures for all labor and materials required for the General Construction of Illinois 2-6, consisting of one 13-story and penthouse elevator building, containing 140 dwelling units, mechanical work, utilities and site improvements on a site located in the vicinity of Campbell Street and Monroe Street.

Sealed bids are to be delivered in person or by mail to the office of the Director of Development, Chicago Housing Authority, 608 S. Dearborn St., Chicago 5, Illinois, until 2:00 PM, local time, on July 1, 1958, immediately after which time and at such place all bids will be publicly opened and read aloud.

Contract documents, plans and specifications may be obtained by depositing $50.00 per set with the Chicago Housing Authority representative, Nicol & Nicol, Architects & Engineers, 23 East Jackson Blvd., Chicago, Illinois on or after June 2, 1958.

Alvin E. Rose
Executive Director

OFFICIAL PROPOSALS

Bids: June 26, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Canal Law and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 26th day of June 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida (Rte. 46 & 49)	FARC 58-70	Durhamville-Rome, SH 1157 Vienna-New London, SH 1159 Proj. DU-526(2), DS-458(2)	1.29	Asphalt Concrete 390′ Welded Plate Girder Br.	$33,000 Plans $2	$607,000
Oneida (Rte. 412)	FARC 58-65	Hamilton College-Clinton SH 1610 Proj. DS-473(1)	0.17	9″ Cem. Conc. Pavt. 32′ Var. Wide=0.14 Mile Asph. Conc.=0.02 Mile Misc. Work=0.01 Mile Prestressed Conc. Beam Br. 103′	$13,000 Plans $2	252,000
DISTRICT No. 3, EARLE E. TOWLSON, Acting District Engineer, 333 E. Washington St., Syracuse, N. Y.						
Cort., Onon., Osw. & Wayne (Rtes. 31, 48, 221, 11, 3 & 29)	RC 58-51	Br. No. 1, SH 9239; Br. No. 2, SH 8259; Br. No. 1, SH 378; Br. No. 2, SH 8420 & Br. E-116, SH 1714		Cleaning & Painting 5 Bridges	$1,300 Plans $2	24,000
Cort. (Rte. 26)	FASSH 58-8	Upper Lisle-Willet, Pt. 2 Proj. S-513(1)	4.53	Asphalt Concrete	$35,000 Plans $2	636,000
Onon. (Rte. 20N)	FARC 58-53 RC 58-54	Cazenova-Manlius, Pt. 3, SH 9025 Proj. DS-769(3)	4.39	Asphalt Concrete	$27,000 Plans $2	460,000
Oswego	US 97	Lock O-2, Oswego Canal at Fulton New York		New Gates & Lowering Sills	5% of Bid Plans $10	
Tomp. (Rte 13)	FARC 58-62	Cayuta-Newfield, SH 5474 Ithaca-Newfield, SH 5214 Proj. F-560(6)	9.70	9″ Cem conc. Pavt. 24′-36′ Wide 5 Prestressed Conc. Brs. 60.1′, 38.9′, 38.5′, 46′ and 47′	$175,000 Plans $10	3,159,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Liv. & Ont. (Rtes. 5 & 20)	FARC 58-29	Lima-East Bloomfield Pt. 1 and Pt. 2, SH 5142-5041 Proj. DF-343(14)	0.47	Asph. Conc.=0.45 Mile Misc. Work=0.02 Mile Prestressed Conc. Bridge 140.4′	$30,000 Plans $2	541,000
Mon.	LOSPRC 58-1	Lake Ontario State Parkway Sect. A, Br. No. 2		Repairing, Cleaning and Painting 3 Span Composite Beam Bridge	$1,600 Plans $2	29,000
Wyom. (Rte. 20A)	FARC 58-66	Varysburg-Warsaw Pt. 2, SH 1349-A Proj. DF-767(3)	0.42	Asph. Concrete 26.5′ Span R.C. Box Br.	$6,000 Plans $2	112,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Bldg., 65 Court Street, Buffalo 2, New York						
Erie (Rte. 16)	FARC 58-63	Center Street, SH 9218 Proj. DF-573(4)	3.46	Asphalt Concrete	$30,000 Plans $2	518,000
Erie & Niag. (Rte. 93)	FARC 58-68	Akron-Tonawanda Creek, SH 947 Griswald Street-Bratts Bridge, SH 660 Lockport-Tonawanda Creek, SH 749 Proj. S-685(2)	3.31	Asph. Conc.=3.19 Mile Misc. Work=0.12 Mile 2 Prestressed Conc. Brs. 64′ and 146′ 1 Comp. WF Beam and Girder Br. 162.5′	$70,000 Plans $5	1,272,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clint.	FISH 58-23 FIC 58-1 FARC 58-5	Int. Rte. 502, Sect. 7B-2 (Rugar St. To Cumberland Head Rd.) Plattsburg-Mooers Pt. 2, SH 259 Proj. I-IG-1119(10), F-576(4)	4.70 (9.69 Acc.)	Asph. Conc.=14.35 Mile Misc. Work=0.04 Mile 5 Hy. Seps. Prestressed Conc. Beams 148.4′, 284.8′; 249.2′, 232.8′ & 246.5′ 1 Twin R.C. Box Bridge 36′	$440,000 Plans $20	8,009,000
Jeff. (Rtes. 11 & 37)	FARC 58-46	Watertown-Philadelphia Pt. 1, SH 5651 Watertown-Theresa Pt. 1, SH 565 Proj. DU-DF-572(5)	1.07	Asphalt Concrete	$16,000 Plans $3	289,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Dutch. (Rte. 9)	FARC 58-61	Poughkeepsie-Hyde Park, SH 453, Vanderbilt SH 9004; Hyde Park-Staatsburg SH 5135 Proj. DF-322(6)	2.75	Asphalt Concrete	$15,000 Plans $2	268,000
Orange (Rte 9W)	RC 58-60	West Point Military Reservation-Cornwall Pt. 1, SH 8500	0.18	9″ Cem. Conc. Pavt. 24′ Var. Wide (Access Drive)	$3,000 Plans $2	53,000
Orange (Rte. 9W)	RC 58-3	West Point Military Reservation-Cornwall Pt. 1, SH 8500; Cornwall-West Point Pt. 3, SH 5573; West Point-Central Valley SH 5328-5328A; Crystal Lake-State Hy. 8078, SH 9328 and Ft. Montgomery-West Point Jct., SH 8526	9.16	Beam Type Guide Railing	$4,000 Plans $2	80,000
Orange (Rte 32)	FARC 58-55	Vails Gate-Newburgh City Line, SH 9033 Proj. DF-532(12)	2.99	9″ Cem. Conc. Pavt. 24′ Wide	$45,000 Plans $3	830,000
Ulster (Rte. 209)	FARC 58-47	Kingston-Ellenville, Pt. 2, SH 305 Kingston-Ellenville, Pt. 1, SH 230 Proj. DF-395(4)	7.33	Asphalt Concrete	$40,000 Plans $2	710,000
West. (Rte. 9)	FARC 58-58	Broadway-Hastings-Dobbs Ferry-Mt. Pleasant Tarrytown-North Tarrytown, SH 9206 Proj. DF-682(8)	2.25	Asphalt Concrete	$7,000 Plans 92	133,000
West.	FICWE 58-1 FIHT 58-2 FARC 58-67	Int. Rte. Conn. 520 Cross West, Exp'y. (Elmsford Sect.): N.Y. State Thruway, Hudson Sect., Sub. 10 (Elmsford Interchange): Tarrytown-White Plains Pt. 1 SH 503 and Access Ramps, Cross Sts., SH 9246 and SH 5571 Proj. I-1101(6); U-358(9)	3.73 (5.68 Acc.)	9″ Cem. Conc. Pavt. 2 @ 36′ Var Wid=3.73 Mi. 9″ Cem. Conc. Pavt. Var. Wide (Acc. etc.)=4.24 Mi. Asph. Conc. (Acc. etc.)=1.44 Mi. 11 Comp: WF Beam Brs. 233.1′, 289.7′, 1,076.2′, 157′; 253.1′, 171.4′, 204.8′, 132.8′, 286.8′, 283.1′, and 222′ 2 Closed R.C. Box Brs. 23.6′ and 33.7′	$750,000 Plans $20	13,647,000
DISTRICT No. 9, J. C. FEDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 17 & 11)	FARCC 58-59	Binghamton City: Court Street, FAC 48-7 Proj. DF-344(23)	0.86	Asphalt Concrete Ty. 2A	$6,000 Plans $2	109,000
Del. (Rte. 8)	FARC 58-40	Deposit-Masonville, SH 1888 Proj. DS-514(1)	7.81	Asphalt Concrete	$39,000 Plans $2	705,000
Otsego & Schoh. (Rte. 165)	FARC 58-64	Roseboom-Janesville Pt. 2, SH 9234 Roseboom-Hanesville Pt. 1, FASSH 54-4 Proj. DS-412(2)	4.15	Asphalt Concrete	$50,000 Plans $3	899,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx	FICBE 58-3 FITNE 58-1	Int. Rte. Conn. FAI 513 (Cont. No. 1) Cross Bronx Expressway and Throgs Neck Expressway Proj. I-1112(5)	2.53	Demolition of Buildings	$10,000 Plans $3	192,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON

SUPT. OF PUBLIC WORKS

Bids: June 26, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 26th day of June 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 3, E. E. Towlson, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Cortland (Rte. 41)	FARC 58-19	McGrawville, S.H. 378 McGrawville-Solon, S.H. 5436 Project DF-525(3)	2.07	Asphalt Concrete Ty. 1A	$27,000 Plans $2	$504,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe	FAC 58-6	Rochester City: Inner Loop (Front St. to North St.) Project DU-1089(8)	0.63	Demolition	$12,000 Plans $2	206,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

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The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: July 8, 1958.

ADVERTISEMENT FOR BIDS FOR WATER SOFTENING PLANT ADDITION DES MOINES WATER WORKS DES MOINES, IOWA

Sealed bids will be received by the Board of Water Works Trustees, Des Moines Water Works, at their office, 1003 Locust St., Des Moines, Iowa up to 10 o'clock A.M., Central Standard Time, July 8th, 1958, on the following contracts:

Contract A—Structures and Outside Piping
Contract B—Filter Equipment
Contract C—Mixing and Settling Basin Equipment
Contract D—Pumping Equipment

The plans and specifications are on file and may be examined at the office of the Des Moines Water Works, 1003 Locust St., Des Moines 7, Iowa, and at the office of Alvord, Burdick & Howson, Engineers, at 20 North Wacker Drive, Chicago 6, Illinois.

Plans and specifications may be obtained by depositing $25.00 for Contract A, and $15.00 for Contracts B, C and D, with the Board of Water Works Trustees or Alvord, Burdick & Howson for each set so obtained. The amount of the deposit for one set will be refunded to each actual bidder who returns the plans and specifications in good condition within 10 days after the opening of bids. Additional copies of the plans and specifications may be bought for the same price, with no refund.

Each bidder shall deposit with his proposal a certified check or bid bond in favor of the Board of Water Works Trustees, in the amount of five per cent (5%) of his bid, which shall be forfeited in case the contractor fails to enter into contract with good and sufficient bond within 10 days after the contract has been awarded to him.

No bid may be withdrawn, after the time for opening bids is past.

The right is reserved to reject any or all bids or waive any informality in any bid, and to accept any considered advantage to the Board.

BOARD OF WATER WORKS TRUSTEES
DES MOINES WATER WORKS
By M. K. TENNY, GENERAL MANAGER

Bids: July 15, 1958.

Contract NYA-970.003

ADVERTISEMENT THE PORT OF NEW YORK AUTHORITY NEW YORK INTERNATIONAL AIRPORT HANGAR NO. 17 FOUNDATIONS

Sealed proposals for the construction of foundations for Hangar No. 17 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, July 15, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, June 12, 1958

Bids: June 26, 1958.

Contract O&M-460

ADVERTISEMENT THE PORT OF NEW YORK AUTHORITY NEWARK AIRPORT RESURFACING RUNWAYS 4-22 AND 11-29 AND SEAL COATING RUNWAY 11-29

Sealed proposals for furnishing all labor, material and equipment for resurfacing portions of Runways 4-22 and 11-29 and seal coating Runway 11-29 at Newark Airport, Newark, New Jersey will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 o'clock Thursday, June 26, 1958, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, June 12, 1958

Bids: July 1st, 1958.

Improvement of Dam Scranton-Spring Brook Water Service Company

135 Jefferson Avenue
Scranton, Pennsylvania

Bids will be received up to 10 A. M. July 1, 1958 for the improvement of Elmhurst Dam near Scranton, Pennsylvania. The work involves about 10,000 cubic yards of earth excavation, about 4,000 cubic yards of compacted earth fill, removal of about 600 cubic yards of stone masonry, the placing of about 700 cubic yards of gravel fill, the placing of about 5,000 cubic yards of concrete, placing of about 200,000 pounds of steel reinforcing bars, the placing of about 150—1¾" anchor bolts about 17 ft. long in drilled holes, the placing and removal of about 10,000 square feet of steel sheet piling, the construction and removal of about 165 lin. ft. of earth filled cofferdam about 20 ft. high, and other miscellaneous work. Plans and Specifications may be obtained at the office of the Company, 135 Jefferson Ave., Scranton, Pennsylvania on or after June 19th and may be seen at the office of Thomas H. Wiggin, Consulting Engineer, 15 W. 46th St., New York, N. Y. A deposit of $50.00 will be made for specifications and drawings.

June 12, 1958

Bids: June 18, 1958

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. on Wednesday, June 18, 1958

For Throgs Neck Bridge Contract No. TN-10C, Bronx Approach Superstructure Steel. The bid must be accompanied by a deposit in the amount of $250,000.00

and

For Throgs Neck Bridge Contract No. TN-10D, Queens Approach Superstructure Steel. The bid must be accompanied by a deposit in the amount of $250,000.00.

Bidders may submit bid for either one or both of the above contracts.

Plans, specifications and contract documents may be purchased at the office of the Authority for $30.00, which will not be refunded.

Read the Official
Proposal Columns of
ENGINEERING
NEWS-RECORD

OFFICIAL PROPOSALS

Bids: August 18, 1958

Government of Iraq Electrification of Central Euphrates Zone Contract No. 22—Substations—Civil Engineering Works

The Development Board and Ministry of Development of the Government of Iraq invite tenders from experienced Civil Engineering firms for the construction of the Civil Works for the Substations of the Central Euphrates Zone electrical System.

Full information regarding this tender can be obtained on and after May, 19, 1958 until July, 21, 1958, from Embassy of Iraq, Washington or Messrs. Electrobel-Traction et Electricité, 1, Place du Trône Brussels, Belgium.

All Tender Documents are to be submitted in English to the Ministry of Development, on or before 12 noon, local time, on August, 18, 1958.

Minister of Development.

Bids: June 26, 1958

Power Authority of the State of New York

NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR THE
FURNISHING AND DELIVERY
OF
GROUNDING CUBICLES
FOR
LEWISTON POWER PLANT
GENERATORS
AND
TUSCARORA POWER PLANT
MOTOR/GENERATORS
SPECIFICATIONS NO. PA-N-25013
NIAGARA CONTRACT NO. NP12

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. Lewiston and Tuscarora Power Plant Areas, as applicable, University Siding, New York, of thirteen (13) Generator Grounding Cubicles for the Lewiston Power Plant and twelve (12) Motor/generator Grounding Cubicles for the Tuscarora Power Plant in Lewiston, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 26th day of June, 1958, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for twenty five (25) grounding cubicles in accordance with the bidding schedule.

Delivery of grounding cubicles will be required beginning on or before October 1, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: July 10, 1958.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5042) will be received at Rupert, Idaho until 10 a.m. Mountain Standard Time, July 10, 1958, for furnishing labor and materials for Little Wood River Dam Enlargement, Little Wood River Project, Idaho. Location near Carey, Idaho in Blaine County. Principal items are 695,000 cu. yds., excavation; 843,000 cu. yds. Zones 1, 2, and 3 dam embankment; 1,190 cu. yds. concrete; and other work. Completion time 700 days. For particulars, address Bureau of Reclamation, Rupert, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: July 8, 1958.

Coraopolis Sewage Treatment Project

Sealed proposals will be received by the Coraopolis Municipal Authority, in the office of Edward N. Weaver, Secretary, Municipal Building, Coraopolis, Pennsylvania, until 8:00 PM, Eastern Daylight Saving Time, July 8, 1958, and will be publicly opened and read shortly thereafter in the Conference Room in the Municipal Building.

Separate proposals will be received upon six (6) parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check or Bid Bond in an amount not less than ten (10) per cent of the bid total, all in accordance with the provisions contained in the Contract Documents.

Copies of the Contract Documents, including Drawings and Specifications, not to exceed two (2) sets of any particular contract to a prospective bidder, may be obtained only from Gannett Fleming Corddry and Carpenter, Inc., 5823 Penn Avenue, Pittsburgh 6, Penna., (Post Office Box 5073) upon deposit of the following indicated amounts for each set:

Contract One
CONSTRUCTION OF INTERCEPTOR, OUTFALL SEWER, SEWAGE REGULATORS, FORCE MAINS AND APPURTENANCES : $30.00

Contract Two
GENERAL CONSTRUCTION OF PUMPING STATIONS, SEWAGE TREATMENT PLANT, ROADS AND APPURTENANCES $40.00

Contract Three
PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF PUMPING STATIONS AND SEWAGE TREATMENT PLANT $25.00

Contract Four
HEATING WORK IN CONNECTION WITH CONSTRUCTION OF PUMPING STATIONS AND SEWAGE TREATMENT PLANT $25.00

Contract Five
ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF PUMPING STATIONS AND SEWAGE TREATMENT PLANT $30.00

Contract Six
EQUIPMENT AND PIPING IN CONNECTION WITH CONSTRUCTION OF PUMPING STATIONS AND SEWAGE TREATMENT PLANT $40.00

Contract Documents, Drawings, and Specifications may be seen at the offices of Gannett Fleming Corddry and Carpenter, Inc., 600 North Second Street, Harrisburg, Pa. and 5823 Penn Avenue, Pittsburgh, Pa.; and also at the Secretary's office, Municipal Building, Coraopolis, Pa.

Full refund will be made (only to actual bidders on the six (6) prime Contracts noted above) for return of one (1) set, no more, of a particular Contract in good condition within fifteen (15) calender days after closing date for receipt of bids; refund for return of all other sets in good condition within the same period, will be fifty (50) per cent of deposit. No refund of deposit will be made for Contract Documents returned later than fifteen (15) calendar days after date of receipt of bids.

The Authority reserves the right to reject any and all bids and also reserves the right to waive irregularities in said bids or proposals.

Gannett Fleming Corddry
and Carpenter, Inc., Engineers
5823 Penn Avenue,
Pittsburgh 6, Pennsylvania
CORAOPOLIS MUNICIPAL SANITARY AUTHORITY
Coraopolis, Allegheny County
Pennsylvania

D.C. GOVT., DEPARTMENT OF HIGHWAYS, D.C., May 26, 1958. SEALED PROPOSALS will be received in Room 404, 499 Penna. Ave., N.W., Wash. 1, D.C., until 2 PM, EDT, June 23, 1958, and then publicly opened and read for Grading the Anacostia Freeway, East Capitol Street to Pennsylvania Avenue (Federal Aid Project No. I-05-1(6), consisting of approximately 300,000 lin. ft. of "Vertical Sand Drains", 270,000 cu. yds. of "Borrow for Embankments, Overload, and Counterberms, Furnished and Placed", 119,000 cu. yds. of "Unclassified Excavation" and 45,000 sq. yds. of "Stabilized Soils Base Course, Twelve (12) Inches in Compacted Depth". Proposal forms, plans and specifications obtainable from Supervisor, Bid & Contract Section, Procurement Office, D.C., Rm. 404, 499 PA. Ave., N.W., upon deposit of a certified check for $30.00 per set, payable to D.C. Treasurer. (phone NA 8-6000, Ext. 2378).

EMPLOYMENT OPPORTUNITIES

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

General Superintendent—Mid-West General Construction firm engaged in Commercial, Industrial, Public Works, Sewers, Bridges, Dams and Reservoirs has opening for qualified general superintendent. Applicants should have experience and be capable of coordinating all types of above work. Complete experience and education data, references and salary expected should be furnished in first reply. P-8023, Engineering News-Record.

Concrete Engineer for mix design. Capable of supervising Material Testing Laboratory for work in southern Idaho. Ample relocation allowances. Send resume to F. C. Torkelson Company, Box 185, Idaho Falls, Idaho.

Estimators—Engineers: Experienced in buildings and general contracting. Permanent positions with General Contractor operating nationwide doing sizable jobs. Salary commensurate with experience and ability. Location—Texas. Give full details covering education, experience, references, salary and personal data. P-8091, Engineering News-Record.

Associate and Assistant Professors for fields of advanced dynamics, advanced strength, and elasticity. Also have opening for graduate student as half-time instructor. Engineering Mechanics Dept., Kansas University, Lawrence, Kansas.

Field engineering for mosquito abatement district. Experience in dragline and dozer work, eligible for Illinois registration. Liberal vacation and other benefits—salary dependent on qualifications and experience. Apply P.O. Box 30, Harvey, Illinois.

Technical Service Engineer. Civil Engineer for technical field work with customers of major cement producer. Age 24-30. Salary open, expenses, company car. Forward resume. P-8112, Engineering News-Record.

Hydraulic Engineer—Graduate civil engineer. 30-40, with 5 or more years experience in hydraulic engineering. Duties involve preparation of technical literature promoting the use of concrete in dams, flood control structures, culverts, and allied fields. Will contact state and federal agencies. Salary open. Headquarters, Chicago, with some travel. P-8152, Engineering News-Record.

Four Draftsmen. Civil, Water and Sewerage. Layout Experience. Also one Chief of Party, Land Surveying, Municipal and Subdivision Experience, New Jersey Shore Area. P-7961, Engineering News-Record.

Sales Engineer with theoretical and practical knowledge of concrete construction—Billner Vacuum Concrete, S.A., 1010 Girard Trust Bldg., Philadelphia 2, Pennsylvania.

Traffic Engineer: $6526-$7904. Graduate engineer with professional traffic engineering and supervisory experience. For complete information, write to Personnel Officer, Room 209, City Hall, Peoria, Illinois.

Civil Engineer II: $5902-$7202. Graduate engineer with considerable experience in the practice of civil engineering, including some supervisory experience. For complete information, write to Personnel Officer, Room 209, City Hall, Peoria, Illinois.

Cost Estimator—With Heavy Construction experience. Firm is established but growing Upstate New York-Municipal Contractor. Desire young ambitious engineer. Salary and future dependent on ability. Furnish resume and references. P-8170, Engineering News-Record.

(Continued on the following page)

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

Send NEW Ads and Inquiries to Classified Advertising Division
of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.
June 26th issue closes June 16th

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.
An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.
Subject to Agency Commission.

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.
Position Wanted ads take 1/2 of above rate.
Box Numbers—count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

GENERAL MANAGER

(Heavy Construction)

This is an outstanding opportunity for an experienced executive in the heavy construction field to become General Manager of one of our expanding, major divisions building dams, bridges, docks, etc.

We are a long established construction company, profitably managed and growing rapidly. Annual volume is approaching $50,000,000. Location is in a desirable U.S.A. City.

...Preferred age—40 to 50

...Engineering degree and proven performance as a manager in competitive heavy construction field is essential.

The compensation will exceed $25,000 and will include a liberal bonus directly related to your division's performance.

Replies will be held confidential and should include age, present position and home telephone number.

P-8042, Engineering News-Record
Class. Adv. Div., P O. Box 12, N.Y. 36, N.Y.

DESIGNERS and DETAILERS

Experienced in the design or detailing of Erection Methods for Bridges and Structures. Write stating age, education and exper. Engineering office located New York City. Reply:

P-7501, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

ESTIMATOR and CIVIL ENGINEER

Experienced in Cofferdam and Form Design, Bridge, Highway and all types of Heavy Construction. Salary open. Send Resume and salary requirements.

OLE HANSEN and SONS, Inc.
Box 553 Pleasantville, New Jersey

CIVIL ENGINEERS

For major heavy construction firm. Heavy dirt or concrete dam field experience. Degree preferred. Age to 33. Relocate. Write:

P-8187, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

10 construction estimators to $12,000

12 construction draftsmen $7,800-$12,000

6 highway designers $200 wk.

9 electrical estimators $200 wk. + bonus

6 jr. highway engineers to $10,000

10 paving supts. $250 wk.

22 paving foremen $150 wk. & up

12 field engineers $800 mo.+

12 party chiefs $140-170 wk.

17 take-off men $8-$10,000

call, write or wire

Joe Elliott

ENGINEERING AGENCY

All Positions 100% Free

209 S. State Chicago, Ill.

WAbash 2-2900

"Since 1893"

• POSITIONS VACANT

(Continued from preceding page)

Responsible operator builder with many years of field construction experience desires to meet a man experienced in estimating and procurement with some contacts. Salary and participation: Must be able to prove ability. State age, formal education, kind of construction work familiar with, salary expected, percentage of participation desired, and telephone number. Information will be held in strict confidence. P-8190, Engineering News-Record.

• EMPLOYMENT SERVICE

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 47 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars, R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

• POSITIONS WANTED

Supt. Const. 20 yrs. Institutional, Industrial, Commercial. Engineer. Anywhere. PW-8072, Engineering News-Record.

WANTED

DESIGN ENGINEERS

Expressways, Modern Highways. Min. 5 years experience. Permanent, hosp., vacation, bonus, etc.

MACCABEE, CAMBPELL & ASSOCS.
173 W. Madison St. Chicago 2, Ill.

• POSITIONS WANTED

Construction Superintendent or manager qualified, 25 yrs. experience. G.M.C. Lucas, 2225 Wisteria, Sarasota, Fla. RI 79843.

Chief Estimator, Graduate Engineer, age 55. Acted as chief estimator with full responsibility for preparation of competitive bids on public building jobs of all types and sizes for many years. Seeks connection with outfit which is willing to pay for top ability and experience. PW-8144, Engineering News-Record.

Architect-Engineer's manager 22 yrs. exp. handling business getting, contracts, field supervision, closing, age 45 six yrs. with present employer desire change. PW-8120, Engineering News-Record.

Contractor's engineer and/or superintendent. B.S.C.E. 16 years diversified experience office and field from bids to completion in water distribution, sewage collection, and treatment facilities. PW-8113, Engineering News-Record.

Civil sanitary engineer, B.S.C.E., 43. Construction management, investigations, design, reports. PW-8114, Engineering News-Record.

Cost Engineer—33, graduate Civil Engineer. Reg. in Texas, 2 1/2 years of cost engineering experience for general contractors plus 4 1/2 years of varied engineering experience, and 2 completed foreign contracts. Prefer foreign assignment with general contractor or A&E. Resume on request. PW-8116, Engineering News-Record.

Construction Superintendent & Engineer. Twenty-five years of practical experience on all types of heavy construction. Bridges, Highways, Marine, also Refineries and Stations, clean record and producer, excellent references, available shortly, prefer West coast or Western states location. PW-8161, Engineering News-Record.

Construction Superintendent. General Construction. Twenty-five years experience. References. PW-8169, Engineering News-Record.

Young Engineer with diversified background in administration and engineering associated with architectral office seeks basically administrative position with growth potential. PW-8176, Engineering News-Record.

Registered highway engineer, land surveyor, 35 years experience. Engineer or construction Superintendent, highways, bridges, sewers. PW-8172, Engineering News-Record.

Construction Paving Foreman, 33 yrs. old. 10 yrs. experience—paving, sewer and water mains. Will work anywhere in Middle West. PW-8171, Engineering-News Record.

Registered Civil Engineer, 38, married, desires work in Latin America. Fluent Spanish. Experienced here and Latin America. PW-8182, Engineering News-Record.

Engineer Struct. overseas Mit, MS, PE, 29, design, some supervis, reinf. & prestressed conc. PW-8178, Engineering News-Record.

Civil Eng'r.-MSCE; age 26; 3 yrs. exp. field & office; desires posit. with gen'l contractor; NY area. PW-8188, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES — **EQUIPMENT USED or RESALE**

——RATES——

DISPLAYED

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED

$2.40 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

Send NEW ADVERTISEMENTS or Inquiries to Class. Adv. Div. of Engineering News-Record, P. O. Box 12, N. Y. June 26th issue closes June 16th.

FOR SALE

- 3—29-T BUCYRUS-ERIE Wire Line Blast Hole Drills
- 2—42-T BUCYRUS-ERIE Wire Line Blast Hole Drills
- 1—New RCA Metal Detector—10″ x 36″ Aperture
- 1—FULLER-KINYON System
- 1—Second-hand Drop Ball (3200#)
- 9—New Well Drill Bits—3¼″ x 4¼″—7 API Joints
- 2—PENNSYLVANIA, Class DE-2, two stage, duplex, cross compound, (direct connected), Synchronous Motor Driven Air Compressors.
  - Low Pressure Air Cylinder Diameter....20″
  - High Pressure Air Cylinder Diameter....12″
  - Stroke ....14″
- 1—4′ x 6′ KENNEDY VAN SAUN Double Deck Vibrating Screen

NEW YORK TRAP ROCK CORP.

Old Mill Road West Nyack, New York
Telephone—NYack 7-4500

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.

Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
Satsuma, Florida

• SPECIAL SERVICE

Accurate quantity take-off and estimates. Architectural, Mechanical and Electrical. Pub. Wks. Commercial and Industrial. Chas. M. Walker B.S. R.E. Phone Fl-6-0647, 114½ E. Univ. Ave., Champaign, Ill.

• CONTRACT WORK WANTED

Experienced structural steel detailers and checkers desire work on contract basis. Meet any time schedule. Maruin L. Gothard, 2548 So. 9th St., Ironton, Ohio.

WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

STRUCTURAL ENGINEERING

ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty third year.

Write today without obligation

WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE, MASS

FOR SALE

PILE HAMMER

10B 3 McKiernan-Terry Pile hammer, with H Beam Pile Helmet

Good Condition Price—$5000.00

WAGMAN PILE COMPANY, INC.
370 East Main Street, Dallastown, Pa.
Phone: Red Lion 3-3851

---

3 KOEHRING DUMPTORS

8 Ton Capacity. Good Working Condition. *REAL BARGAIN.*

STANDARD EQUIPMENT CO.
340 Pierce St. Kingston, Pa. BUtler 8-1426

ASPHALT PLANT

Used Barber-Greene 4000 lb. automatic batch type asphalt plant priced to sell. Contact:

FARLEY EQUIPMENT COMPANY
2136 River Road River Grove, Illinois
Phone Chicago Eastgate 7-1820

Buying

Good USED Equipment

is frequently the difference between having needed equipment or doing without it.

USED

SAFETY NETS & SPIDER STAGING

2—Model ST-18 spider staging units, electrically powered, with 1 adjustable 20 to 25 ft. platform, including all miscellaneous accessories.

10 sections—Safety nets, 40′ x 55′, mesh rope, ½″ diameter, frame rope ¾″, with mesh openings of 4″ x 4″.

10 sections—No. 8 olive drab duck, 40′ x 55′, used as a liner for the above nets.

Write - Wire - Phone

W. N. CHILL

"AUTOMATIC" SPRINKLER CORP. OF AMERICA
Youngstown, Ohio Phone RIverside 6-6561

FOR SALE: Concrete Finisher, Jaeger Type "H", double screed, Continental Gas Engine, new 1956, used only three months. Like-new cond...$5,000.00
400′ Rex curb forms, ft & bk, used 2 wks..$1000.00
Kohring Form Subgrader, A-1 cond......$350.00
Gradall, Mod. #2460, factory carrier, new 1952, 5 attach. Overhauled excell. tires 9:00x20.$12,500.00
10-ton 3-wheel Galion Road Roller, water tank, hyd. steering, 24″ rear wh...............$4,500.00

TESTA BROS., INC. Richmond Rd., Bedford, O.
BE 2-5151

EUCLID REAR DUMPS—USED

5—1953 Model 46TD 22 ton Rear Dumps, equipped with air starters.

2—1952 Model 46TD 22 ton Rear Dumps.

All seven of these machines are powered by Cummins NHRS 300 H.P. diesel, have heated standard body, 10-speed Fuller transmission, cab heater and defroster, new paint job, good operating condition and priced right for immediate possession. Outstanding buy. Offered subject to prior sale or disposition.

L. B. SMITH, INC.
357 W. Fayette St., Syracuse, N. Y.
Phone GRanite 5-2196

1958 CAT DW21

With 470 Scraper &
Super Charged Diesel Engine, 29.5—29 22-Ply Tubeless Hard Rock Lug Tires
(New Machine Guarantee)

HODGE & HAMMOND, INC.
720 Garrison Ave. New York 59, N. Y.
N. Y. Phone: Kilpatrick 2-2400
N. J. Phone: Market 3-5424

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or take them in *trade*.

A complete line of Engineering Instruments and equipment for field or office. Write for Catalog NLR 86.

WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

TRANSITS & LEVELS

Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Representatives: W. & L. E. Gurley,
Distributors—Filotenica Salmoiraghi

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

TRANSIT & LEVEL REPAIR SERVICE

Highly skilled service on all makes in our own modern shop.

USED TRANSITS SALE OR RENT

Fully reconditioned and guaranteed.

Distributor
GURLEY INSTRUMENTS

J.H. WEIL Co.
ESTABLISHED 1890
1336 Cherry St. • Philadelphia 7, Pa.

ALL MAKES

RE-BUILT
REPAIRS
RENT
REAL EXPERTS

BUFF

69 Dey St., New York WOrth 2-2797

CRANES FOR RENT

CRAWLERS Capacities to 60 tons Booms to 180 ft.
TRUCK CRANES Capacities to 35 tons Booms to 130 ft.

P and H. Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

FREE

Latest list of used construction and industrial equipment. Shows PRICES and complete description. Send for your copy today.

Public Utility Special
105 CFM Air Compressor
on Ford Truck P.T.O. Mounting $950.00

2220 Erie Ave. BA. 9-1950 Phila., Pa.

SERVICE SUPPLY CORPORATION

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT OR BUY

FOR
DAMS
BRIDGES
BREAKWATERS
FILTRATION AND
SEWERAGE PLANTS

FOR
SPEED
ECONOMY
EFFICIENCY
FLOOD SAFETY
LABOR REDUCTION

AMBURSEN DAM CO INC
295 MADISON AVE NEW YORK

NEW AND REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Pennsylvania

PILING

SURPLUS NEW and USED **For Sale, Wanted or Rent**

RAILS-TIES

TRACK ACCESSORIES
NEW and RELAYING

We do a Nation-wide business in
STEEL SHEET PILING

IMMEDIATE SHIPMENT

815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
322 pcs. 60 to 30 ft. M-115 and M-116—Illinois
258 pcs. 50 ft. ZP-32—Maryland
241 pcs. 48 ft. MZ-27—Louisiana
76 pcs. 30 to 28 ft. M-112—Florida
67 pcs. 30 to 20 ft. M-116—Wyoming

Other Lengths & Sections at Various Locations, including Storage Yards at CHICAGO & BUFFALO

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Location	Location
200	MP-116	35 to 60 ft.	Chicago
225	MP-115	50 to 60 ft.	Chicago
150	MP-112	50 to 60 ft.	Chicago
84	MP-116	60 to 65 ft.	Kansas City
174	MP-101	34 to 35 ft.	Nebraska
114	MP-116	26 to 30 ft.	Colorado
175	MP-115	14 to 17 ft.	Arkansas

CONMACO, INC.
PHONE DRexel 1-3930
804 KANSAS AVE., KANSAS CITY, KANSAS

RAILROAD Cross and Switch TIES

Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
134 Breckenridge Lane Louisville 7, Ky.

PIPE

Surplus New & Used
FOR SALE

H & STEEL SHEET PILING

300 PCS. BETH. SP6, A65' 50' 56' & 48'
264 PCS. MP112—40' & 60'
447 PCS. BETH.—AP3—25 & 30, 40 & 60 FT.
416 PCS. BETH.—DP2—31' 40' 50' & 64'
536 PCS. BETH. ZP32—25' 36' 48' 55' & 62'
1500 PCS. BP12—BP14—55'-60'
112 PCS. 8'. 300 PCS. 15' Corrugated

PILING BOUGHT—SOLD—RENTED
STOCKS N. Y.—BOSTON—BUFFALO
MONTREAL—BALTIMORE—JACKSONVILLE
VANCOUVER—NEW ORLEANS

INGER, RAND AIR COMPRESSORS
1—3876FT. 700 HP. & 2—3078 FT. 500 HP. PRE2
1—1578FT. 250 HP. XVH. 2—1055FT. 175 HP XRE2

4—GANTRY WHIRLEY CRANES
25 R-Amer. 75' Gantry 165' Boom
20 R-Amer. 60' Gantry 139' Boom

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephone Mu 2-3075

ALBERT
PIPE SUPPLY CO., INC.

PILING • PIPE • CULVERTS • VALVES & FITTINGS

ASBESTOS • CEMENT PIPE • ALUMINUM PIPE

103 VARICK AVE., BROOKLYN, N. Y. • HY 7-4900

STEEL SHEET PILING

LARSSEN and ROMBAS Sections

STOCKS AVAILABLE IN:
- Linden, New Jersey
- Ft. Lauderdale, Florida
- Houston, Texas

WESTERN SERVICES CORPORATION
601 E. Linden Ave., Linden, N. J.
MArket 4-4000 HUnter 6-4000

In Florida Call: Port Everglades Steel Co.
Ft. Lauderdale—JA. 4-6545
In Houston Call: G. Oliver—CA. 4-7234

ASSOCIATED PIPE & FITTING CO.

PILING PIPE SHELLS MANDREL FITTINGS	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH SECTIONAL

P. O. BOX 67, CEDAR GROVE, N. J. • CE 9-4800

EST. 1904
DAVIDSON
PIPE SUPPLY CO. INC.
Seamless and Welded Steel Pipe
Fittings, Valves
Pipe Fabricating
Call GEdney 9-6300
50th St. & 2nd Ave., B'klyn 32, N. Y.

"FASTER FROM FOSTER"

STEEL SHEET **PILING**

All sections from our regular stocks

L. B. FOSTER CO.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

When you need
PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

FOR SALE
480', 48", UNUSED,
Cast Iron Pipe
Class C, B & S. Located Marietta, Ohio.
HEAT & POWER CO., INC.
60 East 42nd Street New York, N. Y.
MUrray Hill 7-5280

STEEL SHEET PILING—*FOR SALE AND RENT*

3000 pcs. Beth SP-6a 40' to 56'—practically new
Attractively priced—prompt shipment from New York State
a joint venture of

WHISLER STEEL PILING CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo.
CHestnut 1-4474

CONMACO, INC.
820 Kansas Ave.
Kansas City 5, Kans.
DRexel 1-3930

R. C. STANHOPE, INC
60 East 42nd St.
New York 17, N. Y.
Murray Hill 2-3075

Phone or write any of the above

PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW–USED
GREENPOINT PIPE SUPPLY CORP.
Bogart and Stagg Streets, Brooklyn, N. Y.

Need A "Lift"?

CRANES, INC.

RENTALS

Manitowoc 3900's — Crawlers 3500's

Latest Models
Long Booms and Jibs

TRUCK CRANES

Link Belt and Bay City. Cap. to 35 Tons.
Booms to 150 ft. Hoists-Welders-Generators

Maspeth 78, N. Y. ST 4-1776

ALL SIZES
NEW • USED

HY DRACHMAN STEEL CORP.

STRUCTURAL STEEL

IMMEDIATE
DELIVERY
FROM STOCK

SPECIALIZING IN PILE SECTIONS • H BEAMS • WF BEAMS

The Contractors Steel Supply House
52-25 2nd Street, Long Island City, New York • RAvenswood 9-1262

STEEL IS OUR BUSINESS

FORSYTHE
EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES

RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals

Exeter 2-6125 37-11 Vernon Blvd.
Long Island City 1, New York

FOR SALE

1—16" Diesel drg. self-propelled *(new)*
2—12" Drg. Steel Hull
1—24" New Drg. Pump
1—12" Drg. Pump Rebuilt 300 H.P. Motor 3 Phase, 60 Cycle, 585 R.P.M.
4—Larger Hyd. Drgs.

H. P. GUION *(Dredge Broker)*
6050 Riverdale Ave.
New York 71, N. Y.
Tele.: KI 9-8245-46

DERRICKS *FOR SALE*

1—300 ton Guy. Rent Also
2—100 ton stiff-leg
1— 25 ton stiff-leg
1— 10 ton stiff-leg

NATIONAL EQUIPMENT COMPANY
Bloomington, Indiana. *Pho. 5188*

EQUIPMENT FOR SALE OR RENT

CRANES: TRUCK OR CRAWLER
STEAM GENERATORS
PUMPCRETES • DUMP TRUCK
AIR COMPRESSORS
PAYLOADER

MOORE & LOPIER
75 West 190 St., N. Y. C. 68
CYpress 5-5700

M-R-S 190 TRACTOR (DEMONSTRATOR)

M-R-S 190 w/Cummins NRTO-6B1 turbo diesel-310 HP. Special drawbar & bracket assembly, Power Take off assembly, weight transfer hydraulics & controls, Luberfiner lube oil filter, pusher plate & pull hook, canopy top, International M-R-S P 29 M power control unit. 29:5 x 25 16 ply rear 12:00 x 20 14 ply front. NEW CONDITION.

SPECIAL DEMONSTRATOR PRICE $26,000.00
New list price $38,000

INDUSTRIAL & FARM EQUIPMENT CORP.
3100 W. 4th ST. CHESTER, PA.

FOR SALE OR RENT

40 ton American Diesel Loco. Crane
65 ton Whitcomb Diesel Elec. Loco.
44 ton Gen. Elec. Diesel Elec. Loco.
25 ton Whitcomb Diesel Elec. Loco. 1948
50 ton Amer. Guy Derrick, 115' Mast, 100' Bm.
90 HP Lidgerwood 2d Diesel Hoist w/Swinger
1½ yd. Lima 602 Diesel Crane. 120' Boom.
150 HP Amer. #140 3d Gas Hoist & Swinger
60 ton Manitowoc 3900 Erection Crane. 140' Bm.
110 HP Clayton Port. Steam Generator

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

PRICED TO SELL!!

8,000 units, unused, 1" U Bolts, galvanized steel Bridge grips. Complete with clamps and nuts. Weighs each 11 lbs.

Steel Bridge 1220 feet long, 32 feet wide, can be used for railroad trestle or traffic. Now disassembled.

(2) Bay City cranes, models 62 diesel powered.

PORTSMOUTH SALVAGE CO. INC.
(phone KI 58471) att'n Jack Garson,
P. O. Box 7594, Portlock Branch,
Norfolk, 15, Va.

FOR SALE

56S Koehring Mixer, No. 56308-9; 220-440 volt motor. 401 Koehring Dragline No. 1640; 65 ft. boom. Located at Washington, D. C.

ALEXANDER & REPASS
309 Securities Bldg.
Des Moines, Iowa

FOR SALE OR RENT

LOCOMOTIVES

1—65-ton Whitcomb diesel locomotive, type 0-4-4-0 Reconditioned in B & O Shops. Excellent condition.
Approx. new price—$90,000.00
Our Price (f.o.t.)—$29,000.00

2—10-ton Plymouth std. ga. diesel locomotive, Cat. D318 engines. Std. couplers. Train airline Completely rebuilt.
new price—$12,000.00
Our price (f.o.b. our plant)—$ 5,950.00

3—8-ton Brookville Mdl BFA, std. ga. 100 HP V-8 engines, 4 speed, forward & reverse.
New price—$8000.00
Our price—$3500.00

LOCOMOTIVE CRANES

3—30-ton Browning Mdl Ml, diesel powered, 50' to 85' Boom. Jibs available.

Write for full details—Available for sale or rent.

CRAWLER CRANES

1—38B Bucyrus-Erie—Late Model—diesel, combination crane and dragline. 75' boom. D13000 Cat. diesel. Rent or sale.

1—Lima Mdl 550—90' boom. Cummins diesel, 90' boom. Good operating condition. Real Buy at—$10,000.00

Stiffleg and guy derricks—10 to 50 ton cap. Hoists, gas—diesel—electric—steam, 5000 to 15,000# L.P.

ECA EQUIPMENT CORPORATION OF AMERICA

Clifton Heights, Pa., Box 608J
Groveton, Pa., Box 43J
Chicago 4, Ill., 327J S. La Salle St.
New York 7, N. Y. 30J Church St.

FOR SALE or RENT

1—15 B Bucyrus-Erie Crane and Backhoe
2—22½ Ton & 30 Ton Lorain Truck Cranes
1—25 Ton Bay City Truck Crane
1—35 Ton Link-Belt Truck Crane
1—D17,000 Caterpillar Power Unit
1—25 Ton Ohio Diesel Locomotive Crane

B. M. WEISS COMPANY
Girard Trust Bldg. Philadelphia, Pa.

STEEL BARGES and WILEY WHIRLEY FLOATING CRANES

Capacity to 100 tons

Continuous Production
Prompt Delivery

Crane Shown 40 Tons, 40 Ft. Radius
With 20' Turntable, 100 Ft. Boom

HAVRE DE GRACE SHIPYARD INC.
Havre De Grace, Maryland

PROFESSIONAL SERVICES

NEW ENGLAND

Jackson & Moreland, Inc.
Engineers and Consultants

Design and Supervision of Construction

Reports — Examinations — Appraisals

Machine Design—Technical Publications

Boston New York

Metcalf & Eddy
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Chevrolet Motor Division GMC	122-123
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John Deere, Ind. Div.	129
Dodge Division-Chrysler Corp.	59
The Dorr-Oliver Company, Inc.	103
Dravo Corp.	85
Dresser Manufacturing Division	109
Richard Dudgeon, Inc.	110
Eastman Kodak Co.	63
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A. W. Faber-Castell Pencil Co., Inc.	13
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Ford Motor Co. Industrial Engine Div.	45
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Garrett Corp.	56
Gary Grating Division Rockwell-Standard Corp.	108
B. F. Goodrich Company, Aviation Products Div.	113
Goodyear Tire and Rubber, Inc.	9
Griffin Wellpoint Corp.	115
Gunite Concrete and Construction Co.	92
Harnischfeger Corp.	18-19
Hewitt Robins Co.	81
Hose McCann Company, Inc.	57
Ingalls Iron Works	2nd Cover
Insurance Company of North America	46
International Harvester Co. (motor)	16-17
Irving Subway Grating Co.	38
Jersey Bolt & Spike Corp.	115
Kern Instrument Co.	72
Kohler Co.	106
Lee Turzillo Contracting Co.	4
Lehigh Portland Cement Co.	96
LeTourneau Westinghouse Co.	121
Lima Works, Construction Equipment Div.-Baldwin-Lima-Hamilton Corp.	78
Lone Star Cement Corp.	24
Lufkin Rule Company	119
Macwhyte Company	86
Madsen Works, Construction Equip. Div., Baldwin-Lima-Hamilton	10
R. C. Mahon Co.	73
Manitowoc Shipbuilding, Inc.	14
Miro Flex Co., Inc.	66
Murphy Diesel Company	1
Nassau Trailer & Motor Sales	115
National Clay Pipe Manufacturers, Inc.	95
National Supply Co.	74
Northwest Engineering Co.	3
Peerless Pump Div. Food Mchy. & Chem. Corp.	93
Peelle Co.	124-125
Penn-Dixie Cement Co.	22
Phoenix Bridge Corp.	92
Pittsburgh Steel Prod. Co.	50-51
Posey Iron Works, Inc.	116
Preload Company, Inc.	58
Reflectal Corp.	104
Remington Arms Co., Inc.	67
Republic Steel Corporation	40-41
Rilco Laminated Products, Inc.	84
Rolatape, Inc.	110
Joseph T. Ryerson & Sons, Inc.	20
Sachse Electric	116
Schlueter Mfg. Co.	106
Shlagro Steel	102
S. Morgan Smith Company	111
Sonoco Products Co.	64, 65
Sparling Meter Co.	117
Standard Dry Wall Products	107
Stow Manufacturing Co.	105
Symons Clamp & Mfg. Co.	2
Tapecoat Company	99
Tectum Corp.	43
Texas Company	68-69
Timken Roller Bearing Co.	4th Cover
U. S. Steel Corp.	5-8; 132-133
Viber Company	70
Westinghouse Electric Corp. Apparatus	76-77
Wheeling Corrugating Co.	88
Wheel Trueing Tool Co.	118
Williams Equipment & Supply Co.	92
R. D. Wood Co.	54
Zonolite Company	120

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Special Services	147
Educational	147
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Editorials

New Roof, New Look

Its brand new building in Washington, D. C., will not, need not make a spanking new organization of the 40-year-old Associated General Contractors of America. Yet, it is reported in this issue (p. 25) that the AGC staff will go to work in the new national headquarters with a policy of stronger public relations.

Public relations must be a prime function of any organization that pretends to speak for its members to the public. AGC seems to have the kind of leadership and broad outlook that should make it a stronger, more authoritative voice in and for the construction industry.

The Rest-Stop Is Over

May was a merry month indeed for the construction industry. It takes no rose-colored glasses to see that. Just look at the steep slope on the chart of heavy construction contracts (ENR June 5, p. 112) as it climbs upward for its fifth consecutive monthly gain in a year that started out mighty low.

Best May ever, with $2.3 billion worth of heavy construction contracts let. And it was the second best month ever, second only to a $2.4 billion month that saw the Savannah River atomic energy plant go to contract at $1.2 million back in 1950.

The recession—which we chose to call a rest-stop in our Annual Report and Forecast Issue in February—is over in almost every category of heavy construction. This week, ENR figures for contracts awarded, caught up with their cumulative dollar total of a year ago. And construction's forward movement from the December depths has been a healthy one: Nearly all categories of heavy construction are moving ahead. Among the types of work yet to match their '57 showing, there is good hope that waterworks, bridges and the earthwork-waterways groups will pick up. Only industrial building lags behind, depending for renewed vitality—more than any other type of construction—on an end to manufacturing's recession. Significantly, roadbuilding, the great hope for boosting 1958's total construction activity, was still just beginning to roll during May. It helped boost the May contract figures, to be sure, but its biggest impact is yet to come, as ENR will show next week.

Let's hope awareness of the steadily increasing needs of the country for constructed physical plant, both public and private, will keep the contract awards curve from slipping back. For it is not enough that this great industry of ours has recovered from nearly all the effects of the present general recession upon it. Construction must stay high, go higher, if we are to avoid a further widening in the gap between supply and demand of necessary constructed products. Further, construction's own greatly improved health is bound to be contagious; it must be helping to lift the general economy from its slump. What the nation needs is customers. The construction industry's now robust rate of putting dollars into people's pockets is surely adding quite considerably to the pocketbooks of customers. May this rate continue to grow for the good of all.

Industrial Waste Progress

Industrial waste treatment has blossomed forth this spring in a veritable outburst of significant activity. All of it augurs well for the future, since the new thinking and conquests are convincing evidence that when it is of a mind to, industry can solve its waste problems in a very adequate—and often brilliant—fashion.

Last week the American Cyanamid Co. dedicated its brilliant adaptation of the activated sludge process at Bound Brook, N. J., amid an unprecedented gathering of sanitary engineers, including regulatory people (p. 33). By deliberately focusing attention on its clean streams program, via its pre-dedication seminar, American Cyanamid also put itself, and perhaps its competitors, on the spot to do equally good jobs at all of its plants.

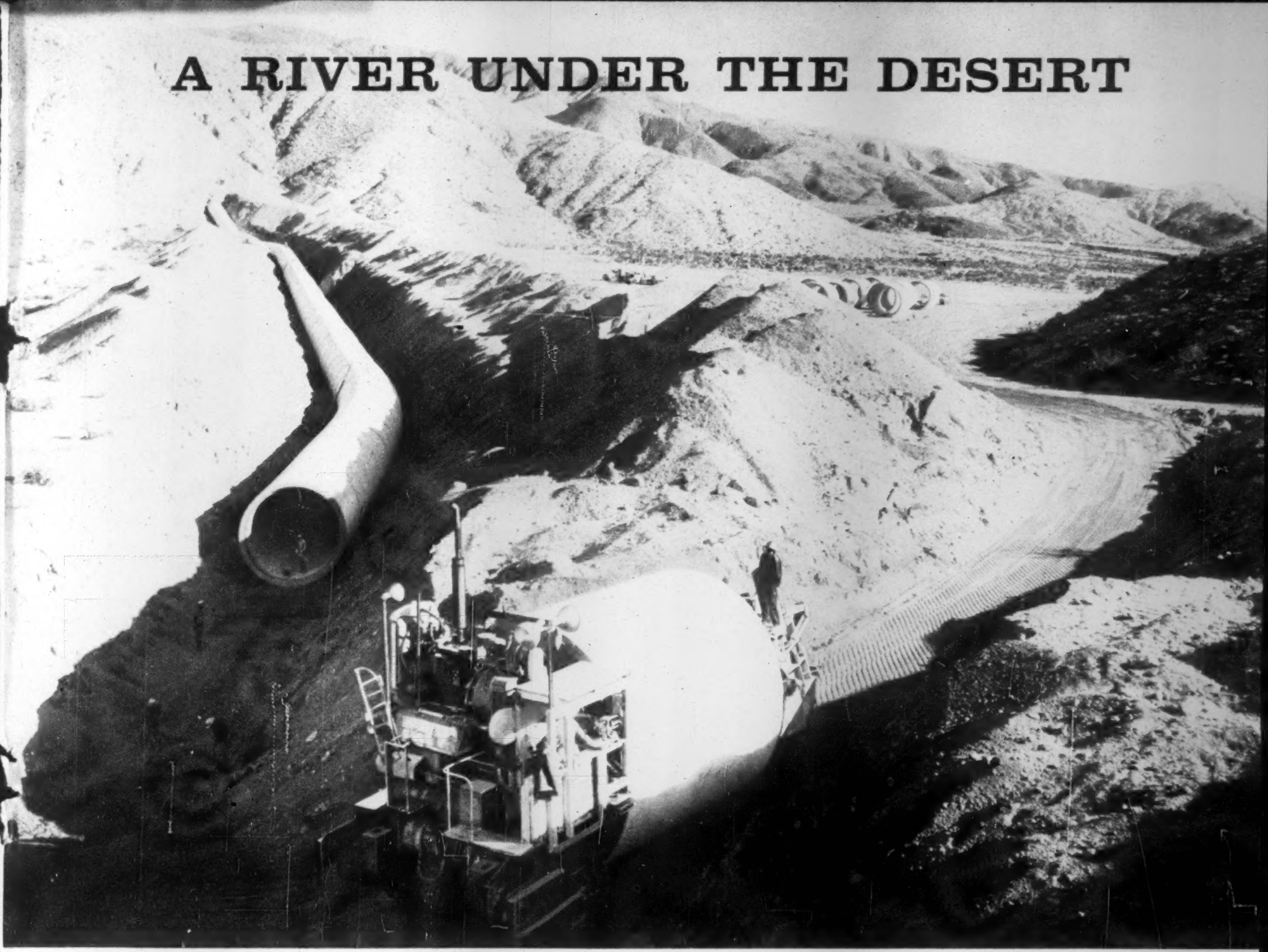
Last month, cost data revealed for the Ruthner process of recovering steel mill pickling liquor (ENR May 29, p. 25) lent substance to the hope of clean stream advocates that at last the steel industry has found a reasonably economical method of handling its most pressing pollution problem.

A couple of weeks before this, at Purdue University's annual Industrial Waste Conference, how Chemstrand Corp. conquered the nylon waste treatment problem at its Pensacola (Fla.) plant was described (ENR May 29, p. 56). Here the researchers had to move over new ground, and how they accomplished what they did constitutes a classic example for those industries having "untreatable" wastes.

Finally, the compromise plan to regulate salt discharge to the Ohio River proposed by an ad hoc committee of the Ohio River Valley Water Sanitation Commission (ENR May 15, p. 28) appears to meet many of the objections of industry to earlier plans. The compromise thus sets the stage for regulation for the first time of a pollutant which has an economic effect before it becomes a public health hazard.

The one cloud in this otherwise bright picture for industrial pollution abatement is the slowdown in industrial construction. During recent high profit years, it was relatively easy for industry to spend the not-inconsiderable dollars required for effective waste treatment. It is to be hoped that the continuing recession in manufacturing industry will not discontinue industry's present good work on waste disposal—not to mention modernization in general.

A RIVER UNDER THE DESERT



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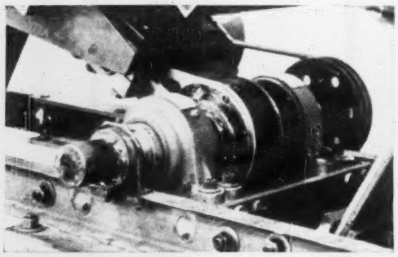
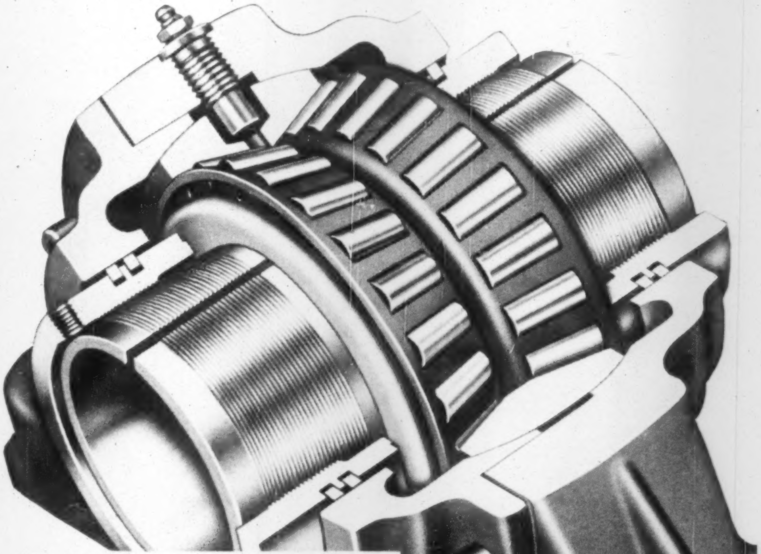
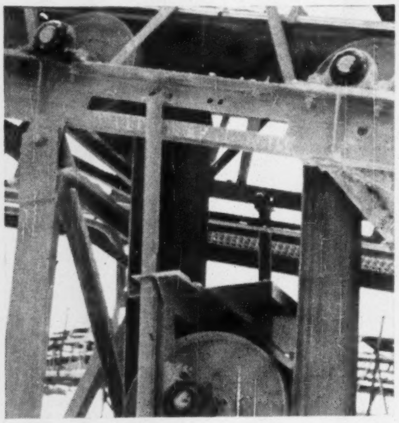
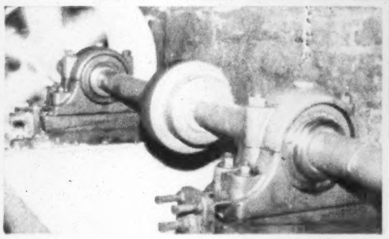


Timken bearing-equipped Dodge All-Steel pillow block used in a vibrating conveyor.





Timken bearing-equipped Dodge Type "E" pillow block used in sand and gravel plant.



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